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Manual abstract:

@@The alternate function is indicated by the text printed above the key. Alternate function $\sin 1\{D\}$ Keypad function s · The following shows what the different colors of the alternate function key text mean. If key marking text is this color: Yellow Red Purple (or enclosed in purple brackets) Green (or enclosed in green brackets) It means this: Press 1 and then the key to access the applicable function. Press S and then the key to input the applicable variable, constant, or symbol. Enter the Cmplx Mode to access the function. Enter the BASE-N Mode to access the function. · The following shows an example of how an alternate function operation is represented in this User's Guide. @@@@Note that this is not part of the actual key operation you perform. @@In this User's Guide, cursor key operation is indicated as f, c, d, and e. REPLAY · The displays and illustrations (such as key markings) shown in this User's Guide and the separate Appendix are for illustrative purposes only, and may differ somewhat from the actual items they represent.

· The contents of this manual are subject to change without notice. · In no event shall CASIO Computer Co., Ltd. be liable to anyone for special, collateral, incidental, or consequential damages in connection with or arising out of the purchase or use of this product and items that come with it. Moreover, CASIO Computer Co. · Ltd. shall not be liable for any claim of any kind whatsoever by any other party arising out of the use of this product and the items that come with it. k Using the Separate Appendix Whenever you see the symbol Appendix in this manual, it means you should refer to the separate Appendix. Example numbers (like "<#021>") in this User's Guide refer to the corresponding example number in the Appendix. Specify the angle unit in accordance with the marks in the Appendix: Deg : Specify Degree for the angle unit.

Rad : Specify Radian for the angle unit. Initializing the Calculator Perform the following procedure when you want to initialize the calculator and return the calculation mode and setup to their initial default settings. Note that this operation also clears all data currently in calculator memory. 19(CLR)3(All)=(Yes) · For information about calculation modes and setup settings, see "Calculation Modes and Calculator Setup". · For information about memory, see "Using Calculator Memory". E-2 Safety Precautions Be sure to read the following safety precautions before using this calculator. Keep this manual handy for later reference. Caution This symbol is used to indicate information that can result in personal injury or material damage if ignored. Battery · After removing the battery from the calculator, put it in a safe place where it will not get into the hands of small children and accidentally swallowed. · Keep batteries out of the reach of small children.

If accidentally swallowed, consult with a physician immediately. · Never charge the battery, try to take the battery apart, or allow the battery to become shorted. Never expose the battery to direct heat or dispose of it by incineration. · Improperly using a battery can cause it to leak and damage nearby items, and can create the risk of fire and personal injury. · Always make sure that the battery's positive k and negative l ends are facing correctly when you load it into the calculator. · Remove the battery if you do not plan to use the calculator for a long time. · Use only the type of battery specified for this calculator in this manual. Disposing of the Calculator · Never dispose of the calculator by burning it. Doing so can cause certain components to suddenly burst, creating the risk of fire and personal injury. E-3 Handling Precautions · Be sure to press the O key before using the calculator for the first time. · Even if the calculator is operating normally, replace the battery at least once every two years. A dead battery can leak, causing damage to and malfunction of the calculator. Never leave a dead battery in the calculator. · The battery that comes with this unit discharges slightly during shipment and storage.

Because of this, it may require replacement sooner than the normal expected battery life. · Low battery power can cause memory contents to become corrupted or lost completely. Always keep written records of all important data. · Avoid use and storage of the calculator in areas subjected to temperature extremes. Very low temperatures can cause slow display response, total failure of the display, and shortening of battery life. Also avoid leaving the calculator in direct sunlight, near a window, near a heater or anywhere else it might be exposed to very high temperatures.

Heat can cause discoloration or deformation of the calculator's case, and damage to internal circuitry. · Avoid use and storage of the calculator in areas subjected to large amounts of humidity and dust. Take care never to leave the calculator where it might be splashed by water or exposed to large amounts of humidity or dust. Such conditions can damage internal circuitry. · Never drop the calculator or otherwise subject it to strong impact. · Never twist or bend the calculator. Avoid carrying the calculator in the pocket of your trousers or other tight-fitting clothing where it might be subjected to twisting or bending. · Never try to take the calculator apart. · Never press the keys of the calculator with a ballpoint pen or other pointed object. · Use a soft, dry cloth to clean the exterior of the calculator.

If the calculator becomes very dirty, wipe it off with a cloth moistened in a weak solution of water and a mild neutral household detergent. Wring out all excess liquid before wiping the calculator. Never use thinner, benzene or other volatile agents to clean the calculator. Doing so can remove printed markings and can damage the case. E-4 Before Using the Calculator k Removing the Hard Case Before using the calculator, slide its hard case downwards to remove it, and then affix the hard case to the back of the calculator as shown in the illustration below. k Turning Power On and Off · Press O to turn on the calculator. · Press 1A(OFF) to turn off the calculator. k Adjusting Display Contrast 1N(SETUP)c6(JCONT") This displays the contrast adjustment screen. Use d and e to adjust display contrast. After the setting is the way you want, press A.

· You can also adjust contrast using d and e while the mode menu (which appears when you press N) is on the display. Important! · If adjusting display contrast does not improve display readability, it probably means that battery power is low. Replace the battery. E-5 k About the Display Your calculator has a 31-dot × 96-dot LCD screen. Example: Input expression Calculation result { Cmplx k Display Indicators Sample Display: This indicator: S Means this: The keypad has been shifted by pressing the 1 key.



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The keypad will unshift and this indicator will disappear when you press a key. The alpha input mode has been entered by pressing the S key. The alpha input mode will be exited and this indicator will disappear when you press a key. There is a value stored in independent memory. The calculator is standing by for input of a variable name to assign a value to the variable.

This indicator appears after you press It(STO). The calculator is standing by for input of a variable name to recall the variable's value. This indicator appears after you press t. The calculator is in the STAT Mode. The calculator is in the CMPLX Mode. The calculator is in the MATRIX Mode. The calculator is in the VECTOR Mode. The default angle unit is degrees. The default angle unit is radians. The default angle unit is grads.

A fixed number of decimal places is in effect. A fixed number of significant digits is in effect. Math style is selected as the input/output format. Calculation history memory data is available and can be replayed, or there is more data above/below the current screen. The display currently shows an intermediate result of a multi-statement calculation. A M STO RCL STAT CMPLX MAT VCT 7 8 9 FIX SCI Math \$ `Disp E-6 Important! · For a very complex calculation or some other type of calculation that takes a long time to execute, the display may show only the above indicators (without any value) while it performs the calculation internally. Calculation Modes and Calculator Setup k Calculation Modes When you want to perform this type of operation: General calculations Complex number calculations Statistical and regression calculations Calculations involving specific number systems (binary, octal, decimal, hexadecimal) Equation solution Matrix calculations Generation of a number table based on an expression Vector calculations Select this mode: COMP CMPLX STAT BASE-N EQN MATRIX TABLE VECTOR Specifying the Calculation Mode (1) Press N to display the mode menu. (2) Press the number key that corresponds to the mode you want to select. · To select the CMPLX Mode, for example, press 2. k Configuring the Calculator Setup Pressing 1N(SETUP) displays the setup menu, which you can use to control how the calculations are executed and displayed.

The setup menu has two screens, which you can jump between using c and f. c f E-7 · See "Adjusting Display Contrast" for information about how to use "JCONT". Specifying the Input/Output Format For this input/output format: Math Linear Perform this key operation: 1N1(MthIO) 1N2(LineIO) · Math format causes fractions, irrational numbers, and other expressions to be displayed as they are written on paper. · Linear format causes fractions and other expressions to be displayed in a single line. Math Math Format Linear Format Specifying the Default Angle Unit To specify this as the default Perform this key operation: angle unit: Degrees Radians Grads $90^\circ = 1N3(\text{Deg})$ $1N4(\text{Rad})$ $1N5(\text{Gra})$ radians = 100 grads 2 Specifying the Number of Display Digits To specify this: Number of Decimal Places Number of Significant Digits Exponential Display Range Perform this key operation: 1N6(Fix)09 1N7(Sci)09 1N8(Norm)1(Norm1) or 2(Norm2) Calculation Result Display Examples · Fix: The value you specify (from 0 to 9) controls the number of decimal places for displayed calculation results.

Calculation results are rounded off to the specified digit before being displayed. Example: $100 \div 7 = 14.286$ (Fix3) 14.29 (Fix2) · Sci: The value you specify (from 1 to 10) controls the number of significant digits for displayed calculation results. Calculation results are rounded off to the specified digit before being displayed.

Example: $1 \div 7 = 1.4286 \times 101$ (Sci5) 1.429×101 (Sci4) E-8 · Norm: Selecting one of the two available settings (Norm1, Norm2) determines the range in which results will be displayed in nonexponential format. Outside the specified range, results are displayed using exponential format. Norm1: $102 > x, x > 1010$ Norm2: $109 > x, x > 1010$ Example: $1 \div 200 = 5 \times 103$ 0.005 (Norm1) (Norm2) Specifying the Fraction Display Format To specify this fraction display format: Mixed Improper Perform this key operation: 1Nc1(ab/c) 1Nc2(d/c) Specifying the Complex Number Display Format To specify this complex Perform this key operation: number format: Rectangular Coordinates 1Nc3(CMPLX)1(a+bi) Polar Coordt.; E-11 · Normally the input cursor appears as a straight vertical (I) or horizontal () flashing line on the display screen. When there are 10 or fewer bytes of input remaining in the current expression, the cursor changes shape to I to let you know. If the I cursor appears, terminate the expression at a convenient point and calculate the result. k Correcting an Expression This section explains how to correct an expression as you are inputting it.

The procedure you should use depends on whether you have insert or overwrite selecte2 MATH Math 1+!2 Math e+3 E-15 Example 3: To input $(1 + \text{MATH } 22) \times 2 = 5$ Math $(1 + 2c5e) w*2 =$ · When you press = and obtain a calculation result using Math format, part of the expression you input can be cut off as shown in the Example 3 screen shot. If you need to view the entire input expression again, press A and then press e. Incorporating a Value into a Function

When using Math format, you can incorporate part of an input expression (a value, an expression within parentheses, etc.) into a function. Example: To incorporate the expression inside of the parentheses of $1 + (2 + 3) + 4$ into the 'function MATH Move the cursor to here. Math Math 1Y(INS) This changes the shape of the cursor as shown here. Math ! This incorporates the expression in the parentheses into the function '. · If the cursor is located left of a particular value or fraction (instead of an open parentheses), that value or fraction will be incorporated into the function specified here. · If the cursor is located left of function, the entire function is incorporated into the function specified here. The following examples show the other functions that can be used in the above procedure, and the required key operations to use them.

Original Expression: Function Fraction $\log(a,b)$ Power Root Key Operation ' & 16(") Resulting Expression E-16 Original Expression: Function Integral Derivative Key Operation 7 17(F) 1&(8) Resulting Expression Calculation You can also incorporate values into the following functions. 1I(\$), 1I(%), !, 6, 1I(#), 1w(Abs) Displaying Calculation Results in a Form that Includes ', 2, etc. (Irrational Number Form) When "MthIO" is selected for the input/output format, you can specify whether calculation results should be displayed in a form that includes expressions like ' and (irrational number form).



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2 · Pressing = after inputting a calculation displays the result using irrational number form. · Pressing I= after inputting a calculation displays the result using decimal values.

Note · When "LineIO" is selected for the input/output format, calculation results are always displayed using decimal values (no irrational number form) regardless of whether you press = or I=. · form (form that includes within irrational number display) display conditions are the same as those for S-D conversion. For details, see "Using S-D Transformation". Example 1: ' + ' = 3' 2 8 2 MATH 1 !2e+!8= Math Math 2 !2e+!8I= E-17 Example 2: sin (60) = MATH ' 3 2 s60= (Angle Unit: Deg) Math Example 3: sin1 (0.5) = MATH 1 6 (Angle Unit: Rad) Math 1s(sin1)0.

5= · The following are the calculations for which ' form (form that includes ' within irrational number display) results can be displayed. a. Arithmetic calculations of values with square root symbol ('), x2, x3, x1 b. Trigonometric function calculations c. Complex number Abs calculations d. CMPLX Mode polar coordinate display (r) The following are the input value ranges for which ' form is always used for display of trigonometric calculation results. Angle Unit Setting Deg Rad Gra Angle Value Input Units of 15° 1 Multiples of radians 12 50 Multiples of grads 3 Input Value Range for ' Form Calculation Result $x < 9 \times 10^9$ $x < 20 \times 10^4$ Calculation results may be displayed in decimal form for input values outside of the above ranges. k ' Form Calculation Range Note When performing complex number calculations in the CMPLX Mode, the following conditions apply respectively to both the real part and the imaginary part. Results that include square root symbols can have up to two terms (an integer term is also counted as a term). ' form calculation results use display formats like those shown below.

$b e \pm a'$, $\pm d \pm a'$, $\pm a' \pm d'$ b c f E-18 The following shows the range for each of the coefficients (a, b, c, d, e, f). $1 < a < 100$, $1 < b < 1000$, $1 < c < 1000$, $0 < d < 100$, $0 < e < 1000$, $1 < f < 100$ Example: $2' \times 4 = 8' 3 3 35' \times 3 = 148.492424 2 (= 105' 2) 150' 2 = 8.485281374 25 2 \times (3 2') = 6 4' 5 5 23 \times (5 2') = 35.32566285 3 (= 115 46')$ $3 10' + 15 \times 3' = 45' + 10' 2 3 3 2 15 \times (10' + 3') = 290.0743207 2 3 (= 45' + 150')$ $3 2' + ' + ' = ' + 3' 2 3 8 3 2' + ' + ' = 5.595754113 2 3 6$ ' form decimal form ' form decimal form ' form decimal form ' form decimal form The underlined areas in the above examples indicate what caused decimal form to be used. Reasons why the results of the examples are displayed in decimal form - Value outside of the allowable range - More than two terms in the calculation result · Calculation results displayed in ' form are reduced to a common denominator. $a' + d'$ $a' + d'$ b e b e c f c · c is the least common multiple of c and f. · Since calculation results are reduced to a common denominator, they are displayed in ' form even if coefficients (a, c, and d) are outside the corresponding ranges of coefficients (a, c, and d).

' $10' + 11' 3 2 3 2 + =$ Example: $11 10 110$ · The result is displayed in decimal form even when any intermediate result has three or more terms. Example: $(1 + ' + ')(1 ' ')(= 4 2') 2 3 2 3 6 = 8.898979486$ E-19 · If a term is encountered during the calculation cannot be displayed as a root (') form or a fraction, the calculation result is displayed in decimal form. Example: $\log 3 + ' = 1.891334817 2$ Basic Calculations (COMP) This section explains how to perform arithmetic, fraction, percent, and sexagesimal calculations.

All calculations in this section are performed in the COMP Mode (N1). k Arithmetic Calculations Use the +, -, *, and / keys to perform arithmetic calculations. Example: $7 \times 8 4 \times 5 = 36$ LINE $7*8-4*5=$ · The calculator automatically judges the calculation priority sequence. For more information, see "Calculation Priority Sequence". Number of Decimal Places and Number of Significant Digits You can specify a fixed number of decimal places and significant digits for the calculation result.

Example: $1 \div 6 =$ LINE Initial default setting (Norm1) FIX 3 decimal places (Fix3) SCI 3 significant digits (Sci3) · For more information, see "Specifying the Number of Display Digits". E-20 Omitting a Final Closed Parenthesis You can omit any closed parenthesis () immediately preceding operation of the = key at the end of a calculation. This is true only in the case of Linear format. Example: $(2 + 3) \times (4 - 1) = 15$ LINE $(2+3)*(4-1)=$ k Fraction Calculations How you should input fractions depends on the input/output format that is currently selected. Improper Fraction Math Format Mixed Fraction $7 3 ('7c3) 2 1 3 (1'((2e1c3) 7)3$ Linear Format $2\{1\{3$ Denominator Numerator Numerator Denominator Integer Part (7'3) (2'1'3) · Under initial default settings, fractions are displayed as improper fractions. · Fraction calculation results are always reduced before being displayed. Appendix 2 1 7 <#001> -- + -- = -- 3 2 6 1 2 11 <#002> 3 -- + 1 -- = 4 -- (Fraction Display Format: ab/c) 4 3 12 1 1 4 3 -- = -- (Fraction Display Format: ab/c) 2 2 · If the total number of digits used for a mixed fraction (including integer, numerator, denominator, and separator symbols) is greater than 10, the value is automatically displayed in decimal format. · The result of a calculation that involves both fraction and decimal values is displayed in decimal format. Switching between Improper Fraction and Mixed Fraction Format b d Pressing the If(a -- --) key toggles the display fraction c c between mixed fraction and improper fraction format. E-21 Switching between Fraction and Decimal Format f · The format of the fraction depends on the currently selected fraction display format setting (improper fraction or mixed fraction).

· You cannot switch from decimal format to mixed fraction format if the total number of digits used in the mixed fraction (including integer, numerator, denominator, and separator symbols) is greater than 10. · For details about the f key, see "Using S-D Transformation". k Percent Calculations Inputting a value and pressing I(%) causes the input value to become a percent.



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Appendix 2 (----) $100 \times 20\% = 30$ ($150 \times 20\% = 30$) $100 \times 2\% = 0.02$ Calculate what percentage of 880 is 660. (75%) Increase 2500 by 15%. (2875) Discount 3500 by 25%. (2625) Discount the sum of 168, 98, and 734 by 20%. (800) If 300 grams are added to a test sample originally weighing 500 grams, what is the percentage increase in weight? (160%) <#10> What is the percentage change when a value is increased from 40 to 46? How about to 48? (15%, 20%) <#005> <#006> <#007> <#008> <#009> k Degree, Minute, Second (Sexagesimal) Calculations You can perform calculations using sexagesimal values, and convert values between sexagesimal and decimal. Inputting Sexagesimal Values The following is the syntax for inputting a sexagesimal value.

{Degrees}e{Minutes}e{Seconds}e Appendix <#011> Input $2^{\circ}30'$. Note that you must always input something for the degrees and minutes, even if they are zero. E-22 Sexagesimal Calculations Performing the following types of sexagesimal calculations produces a sexagesimal result. Addition or subtraction of two sexagesimal values Multiplication or division of a sexagesimal value and a decimal value Appendix <#012> $2^{\circ}20'30'' + 39'30'' = 3^{\circ}00'00''$ Converting Values between Sexagesimal and Decimal Pressing e while a calculation result is displayed toggles the value between sexagesimal and decimal. Appendix <#013> Convert 2.

255 to its sexagesimal equivalent. Using Multi-statements in Calculations You can use the colon character (:) to connect two or more expressions and execute them in sequence from left to right when you press =. Example: To create a multi-statement that performs the following two calculations: $3 + 3$ and 3×3

LINE $3+3S7(:)3*3$ Disp = "Disp" indicates this is an intermediate result of a multi-statement. = E-23 Using Calculation History Memory and Replay Calculation history memory maintains a record of each calculation expression you input and execute, and its result. Modes that support calculation history memory: COMP (N1), CMPLX (N2), BASE-N (N4) Recalling Calculation History Memory Contents Press f to back-step through calculation history memory contents.

Calculation history memory shows both calculation expressions and results. Example: LINE $1+1=2+2=3+3=ff$. Note that calculation history memory contents are cleared whenever you turn off the calculator, press the O key, change to the calculation mode or the input/output format, or perform any reset operation. Calculation history memory is limited. When the calculation you are performing causes calculation history memory to become full, the oldest calculation is deleted automatically to make room for the new calculation. Replay Function While a calculation result is on the display, you can press A and then d or e to edit the expression you used for the previous calculation. If you are using Linear format, you can display the expression by pressing d or e, without pressing A first. Appendix <#014> E-24 Using Calculator Memory Memory Name Description Calculation results can be added to or subtracted from independent memory. The "M" display indicator indicates data in independent memory. Six variables named A, B, C, D, X, and Y can be used for storage of individual values. Answer Memory Stores the last calculation result obtained.

Independent Memory Variables This section uses the COMP Mode (N1) to demonstrate how you can use memory. k Answer Memory (Ans) Answer Memory Overview Answer Memory contents are updated whenever you execute a calculation using any one of the following keys: =, 1=, m, 1m(M), t, 1t(STO). Answer Memory can hold up to 15 digits. Answer Memory contents are not change if an error occurs during the current calculation. Answer Memory contents are maintained even if you press the A key, change the calculation mode, or turn off the calculator. If a CMPLX Mode calculation produces a complex number result, both the real part and imaginary part are stored in Answer Memory. In this case, however, the imaginary part will be cleared from Answer Memory if you change to another calculation mode. Using Answer Memory to Perform a Series of Calculations Example: To divide the result of 3×4 by 30 LINE $3*4=$ (Continuing)/30= Pressing / automatically inputs "Ans" command. With the above procedure, you need to perform the second calculation immediately after the first one. If you need to recall Answer Memory contents after pressing A, press the G key.

E-25 Inputting Answer Memory Contents into an Expression Example: To perform the calculations shown below: $123 + 456 = 579$ $789 - 579 = 210$ LINE $123+456=789-G=k$ Independent Memory (M) You can add calculation results to or subtract results from independent memory. The "M" appears on the display when independent memory contains a value. Independent Memory Overview The following is a summary of the different operations you can perform using independent memory. To do this: Add the displayed value or result of the expression to independent memory Subtract the displayed value or result of the expression from independent memory Recall current independent memory contents Perform this key operation: m 1m(M) tm(M) You can also insert the M variable into a calculation, which tells the calculator to use the current independent memory contents at that location. The following is the key operation for inserting the M variable.

Sm(M) The "M" indicator appears in the upper left of the display when there is any value other than zero stored in independent memory. Independent memory contents are maintained even if you press the A key, change the calculation mode, or turn off the calculator. E-26 Calculation Examples Using Independent Memory If the "M" indicator is on the display, perform the procedure under "Clearing Independent Memory" before performing this example.

Example: $23 + 9 = 32$ $23+9m$ $53 - 6 = 47$ $53-6m$ $45 \times 2 = 90$ $45*21m(M)$ $99 \div 3 = 33$ $99/3m$ (Total) 22 $tm(M)$ Clearing Independent Memory Press 01t(STO)m. This clears independent memory and causes the "M" indicator to disappear from the display.

k Variables (A, B, C, D, X, Y) Variable Overview You can assign a specific value or a calculation result to a variable. Example: To assign the result of $3 + 5$ to variable A. $3+51t(STO)y(A)$ Use the following procedure when you want to check the contents of a variable. Example: To recall the contents of variable A ty(A) The following shows how you can include variables inside of an expression. Example: To multiply the contents of variable A by the contents of variable B Sy(A)*Se(B)= Variable contents are maintained even if you press the A key, change the calculation mode, or turn off the calculator.



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Appendix <#015> Clearing the Contents of a Specific Variable Press 01t(STO) and then press the key for the name of the variable whose contents you want to clear. To clear the contents of variable A, for example, press 01t(STO)y(A). k Clearing the Contents of All Memories Use the following procedure to clear the contents of Answer Memory, independent memory, and all of the variables. Press 19(CLR)2(Memory)=(Yes). · To cancel the clear operation without doing anything, press A(Cancel) instead of =.

E-27 Using CALC The CALC feature lets you input a calculation expression that contains variables, and then assign values to the variables and perform the calculation. You can use CALC in the COMP Mode (N1) and in the CMPLX Mode (N2). k Expressions Supported by CALC The following describes the types of expressions that can be used with CALC. u Expressions that contain variables Example: $2X + 3Y$, $5B + 3i$, $2AX + 3BY + C$ u Multi-statements Example: $X + Y : X(X + Y)$ u Expressions with a single variable on the left Example: {variable} = {expression} The expression on the right of the equals sign (input using Ss(=)) can contain variables. Example: $Y = 2X$, $A = X^2 + X + 3$ k Example Calculation Using CALC To start a CALC operation after inputting an expression, press the s key. Example: LINE 3*Sy(A) s Prompts for input of a value for A. Current value of A 5= E-28 s (or=) 10= · To exit CALC, press A. · If the expression you are using contains more than one variable, an input prompt appears for each one. Appendix <#016> Calculate an $+1 = an + 2n$ ($a1 = 1$) as the value of an changes from a2 to a5. (Results: $a2 = 3$, $a3 = 7$, $a4 = 13$, $a5 = 21$) *1 *3 *5 *7 Assigns 1 to a1. Value of a2 Assigns 2 to n. Value of a4 *2 *4 *6 *8 Assigns 1 to n. Assigns value to a2. Value of a3 Value of a5 Using SOLVE (COMP) SOLVE uses Newton's Method of approximation to solve an equation. You can use SOLVE in the COMP Mode (N1) only.

k Rules Governing Equations when Using SOLVE · You can use the following types of syntax for the solution variable. Example: $Y = X + 5$, Y (Solves for Y.); $XB = C + D$, B (Solves for B.) The following shows the syntax for the log function. (When the variable specification "X" is omitted, the equation $Y = X \times \log 102$ is solved for X.

) $Y = X \times \log(2, Y)$ (When the variable specification "Y" is included, the equation $Y = X \times \log 102$ is solved for Y.) $Y = X \times \log(2, Y)$ (When the variable specification "X" is omitted, the equation $Y = X \times \log 2Y$ is solved for X.) · Unless you specify otherwise, an equation is solved for X. Example: $Y = X + 5$, $X = \sin(M)$, $X + 3 = B + C$, $XY + C$ (Treated as $XY + C = 0$.) · SOLVE cannot be used to solve an equation that contains an integral, derivative, (function, Pol(function, Rec(function, or multi-statement. $Y = X \times \log(2$ E-29 · An error (Variable ERROR) occurs when the solution variable is not included in the expression being solved. k Example SOLVE Operation Example: To solve $y = ax^2 + b$ for x when $y = 0$, $a = 1$, and $b = 2$. MATH Sf(Y)Ss(=)Sy(A) S(X)w+Se(B) 1)(,S)(X) Math Math 1s(SOLVE) Prompts for input of a value for Y. Current value of Y Math 0= Math 1= Math y2= Current value of X Math = Solution Screen · To interrupt an ongoing SOLVE operation, press A. Precautions when Using SOLVE · SOLVE may not be able to obtain a solution because of the initial value (assumed value) of the solution variable.

If this happens, try changing the initial value of the solution variable. E-30 · SOLVE may not be able to determine the correct solution, even when one exists. · SOLVE uses Newton's Method, so even if there are multiple solutions, only one of them will be returned. · Newton's Method can have problems obtaining solutions for the following types of functions. - A periodic function ($y = \sin(x)$, etc.) - A function whose graph includes a steep slope ($y = e^x$, $y = 1/x$, etc.) - A discontinuous function ($y = ' etc.) x$, Solution Screen Contents Input equation Math Solution variable Solution (left side) (right side) form result · The "(left side) (right side) form result" shows the result when the obtained solution is assigned to the solution variable. The closer this value is to zero, the higher is the precision of the obtained solution. Continue Screen SOLVE performs convergence a preset number of times.

If it cannot find a solution, it displays a confirmation screen that shows "Continue: [=1]", asking if you want to continue. Press = to continue or A to cancel the SOLVE operation. Appendix <#017> Solve $y = x^2 + 1$ for x when $y = 3, 7, 13$, and 21. (Solutions: $x = 2, 3, 4, 5$ when $y = 3, 7, 13, 21$ respectively) *1 Assigns 3 to Y. *2 Assigns an initial value of 1 to X.

E-31 Function Calculations This section explains how to use the calculator's built-in functions. The functions available to you depends on the calculation mode you are in. The explanations in this section are mainly about the functions that are available in all calculation modes. All of the examples in this section show operation in the COMP Mode (N1). · Certain function calculations may take some time to display calculation results.

Before performing an operation, be sure to wait until execution of the current operation is complete. You can interrupt an ongoing operation by pressing A. k Pi () and Natural Logarithm Base e You can input pi () or natural logarithm base e into a calculation. The following shows the required key operations and the values this calculator uses for pi () and e. 3.14159265358980 (15()) $e = 2.71828182845904$ (S5(e)) · You can use and e in any calculation mode except for BASE-N. k Trigonometric and Inverse Trigonometric Functions · Trigonometric and inverse trigonometric functions can be used in the COMP, STAT, EQN, MATRIX, TABLE, and VECTOR calculation modes. They can also be used in the CMPLX Mode, as long as complex numbers are not used for their arguments. · The angle unit required by trigonometric and inverse trigonometric functions is one specified as the calculator's default angle unit.

Before performing a calculation, be sure to specify the default angle unit you want to use. See "Specifying the Default Angle Unit" for more information. Appendix <#018> $\sin 30 = 0.5$, $\sin 10.5 = 30$ k Hyperbolic and Inverse Hyperbolic Functions Hyperbolic and inverse hyperbolic functions can be used in the same modes as the trigonometric functions. Pressing the w key displays a menu of functions. Press the number key that corresponds to the function you want to input. Appendix <#019> $\sinh 1 = 1.175201194$, $\cosh 1 = 0$ E-32 k Converting an Input Value to the Calculator's Default Angle Unit After inputting a value, press 1G(DRG') to display the angle unit specification menu shown below.



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Press the number key that corresponds to the angle unit of the input value.

The calculator will automatically convert it to the calculator's default angle unit. Example: To convert the following values to degrees: radians = 90° , 50 grads = 45° 2 The following procedure assumes that the calculator's default angle unit is degrees. LINE (15)(/2) 1G(DRG')2(r)= 501G(DRG') 3(g)= Appendix <#020> $\cos(\text{radians}) = 1$, $\cos(100 \text{ grads}) = 0$ <#021> $\cos 1(1) = 180 \cos 1(1) = k$ Exponential Functions and Logarithmic Functions · Exponential and logarithmic functions can be used in the same modes as the trigonometric functions. · For the logarithmic function "log", you can specify base m using the syntax "log (m, n)". If you input only a single value, a base of 10 is used for the calculation.

· "ln(" is a natural logarithm function with base e . · You can also use the & key when inputting an expression with the form of "logm" while using Math format. For details, see Appendix <#022>. Note that you must input the base (base m) when using the & key for input. Appendix <#023> to <#025> *1 A base of 10 (common logarithm) is used if no base is specified.

E-33 k Power Functions and Power Root Functions · Power functions and power root functions can be used in the COMP, STAT, EQN, MATRIX, TABLE, and VECTOR calculation modes. @@@@A default value of 1×105 is used when you do. @@@@Specify a tol value that is 1×1014 or greater. · You cannot input a tol value when using Math format. @@· Pressing A will interrupt an ongoing integration calculation. E-34 Tips on Improving Integration Value Accuracy · When a periodic function or integration interval results in positive and negative $f(x)$ function values Perform separate integrations for each cycle, or for the positive part and the negative part, and then combine the results. S Positive S Negative b a $f(x)dx = c$ a $f(x)dx + (b c f(x)dx)$ Positive Part (S Positive) Negative Part (S Negative) · When integration values fluctuate widely due to minute shifts in the integration interval Divide the integration interval into multiple parts (in a way that breaks areas of wide fluctuation into small parts), perform integration on each part, and then combine the results. b a $f(x)dx = x1$ a $f(x)dx + x2$ x1 $f(x)dx + \dots$

..+ b x4 $f(x)dx$ Appendix <#031> $(\ln(x), 1, e) = 1 1 7 = 0.8$ <#032> 2, 1, 5, 1×10 (tol specification omitted.) (x) E-35 k Differential Calculations Your calculator performs differential calculations by approximating the derivative based on centered difference approximation. @@A default value of 1×1010 is used when you do. @@@@Specify a tol value that is 1×1014 or greater. · You cannot input a tol value when using Math format.

@@@@@· The calculation step is fixed at 1. @@· Pressing A will interrupt an ongoing calculation.

@@@@@Appendix <#038> $(5 + 3)!$ @@@@Appendix <#040> Generate three 3-digit random numbers. The random 3 digit decimal values are converted to 3-digit integer values by multiplying by 1000. Note that the values shown here are examples only. Values actually generated by your calculator will be different. Permutation (nPr) and Combination (nCr) These functions make it possible to perform permutation and combination calculations.

n and r must be integers in the range of $0 < r < n < 1 \times 1010$. Appendix <#041> How many four-person permutations and combinations are possible for a group of 10 people? E-38 Rounding Function (Rnd) This function rounds the value or the result of the expression in the function's argument to the number of significant digits specified by the number of display digits setting. Display Digits Setting: Norm1 or Norm2 The mantissa is rounded to 10 digits. Display Digits Setting: Fix or Sci The value is rounded to the specified number of digits. Example: $200 \div 7 \times 14 = 400$ LINE $200/7*14=$ (Specifies three decimal places.

) IN6(Fix)3 FIX (Calculation is performed internally using 15 digits.) FIX $200/7=$ FIX *14= The following performs the same calculation with rounding. FIX $200/7=$ (Round the value to the specified number of digits.) FIX 10(Rnd)= (Check rounded result.) FIX *14= E-39 k Practical Examples Appendix <#042> $0(\sin X + \cos X) dX = 2$ (tol: Not specified) <#043> Confirm that the two sides of the following equation are equal: $e = 1 n=0 n!$ Transforming Displayed Values You can use the procedures in this section to transform a displayed value to engineering notation, or to transform between standard form and decimal form. k Using Engineering Notation A simple key operation transforms a displayed value to engineering notation. Appendix <#044> Transform the value 1,234 to engineering notation, shifting the decimal point to the right. <#045> Transform the value 123 to engineering notation, shifting the decimal point to the left. k Using S-D Transformation You can use S-D transformation to transform a value between its decimal (D) form and its standard (S) form (fraction,). Formats Supported for S-D Transformation S-D transformation can be used to transform a displayed decimal calculation result to one of the forms described below.

Performing S-D transformation again converts back to the original decimal value. Note · When you transform from decimal form to standard form, the calculator automatically decides the standard form to use. You cannot specify the standard form. Fraction: The current fraction display format setting determines whether the result is an improper fraction or mixed fraction. E-40 : The following are the forms that are supported. This is true only in the case of Math format. n (n is an integer.) d a b (depending on fraction display format c or c setting) · Transformation to a fractional form is limited to inverse trigonometric function results and values that are normally expressed in radians. · After obtaining a calculation result in ' form, you can convert it to decimal form by pressing the f key. When the original calculation result is in decimal form, it cannot be converted to ' form.

Examples of S-D Transformation Note that S-D transformation can take some time to perform. Example: Fraction Decimal MATH '5c6= · Each press of the f key toggles between the two forms. ff Appendix <#046> Fraction Decimal <#047> ' Decimal Math Complex Number Calculations (CMPLX) Your calculator can perform the following complex number calculations. · Addition, subtraction, multiplication, division · Argument and absolute value calculations · Reciprocal, square and cube calculations · Conjugate complex number calculations All calculations in this section are performed in the CMPLX Mode (N2).



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3 I Appendix <#048> $(1 + 3i) \div (2i) = -- -- i 2 2 E-41$ k Inputting Complex Numbers · In the CMPLX Mode, the W key changes function to become an imaginary number i input key.

In this section, the W key is referred to as the i key. Use the i key when inputting a complex number of the format $a + bi$. The key operation below shows how to input $2 + 3i$, for example. CMPLX Math $2+3i$ · You can also input complex numbers using polar coordinate format (r). The key operation below shows how to input 5 30, for example.

CMPLX Math 51y()30 · The angle unit for argument input and result display is the calculator's default angle unit. k Calculation Result Display Format Your calculator can display complex number calculation results in rectangular coordinate or polar coordinate format. You can select the coordinate format by configuring the calculator's setup. @@@@ Use the STAT menu to select a statistical calculation type. @@@@ · Pressing A while inputting data clears your current input. · After inputting a value, press =. This registers the value and displays up to six of its digits in the currently selected cell. Example: To input the value 123.45 in cell X1 (Move the cursor to cell X1.) 123.

45 The value you input appears in the formula area. STAT STAT = Registering a value causes the cursor to move down one cell. STAT Editor Screen Input Precautions · The number of lines in STAT editor screen (the number of sample data values you can input) depends on the type of statistical data you selected, and on the Statistical Display setting of the calculator's setup screen. Statistical Display Statistic Type Single-variable Paired-variable OFF (No FREQ column) 80 lines 40 lines ON (FREQ column) 40 lines 26 lines · The following types of input are not allowed on the STAT editor screen. · m, Im(M) operations · Assignment to variables (STO) E-45 Precautions Concerning Sample Data Storage Sample data you input is deleted automatically whenever you change to another mode from the STAT Mode or change the Statistical Display setting (which causes the FREQ column to be shown or hidden) on the calculator's setup screen. Editing Sample Data Replacing the Data in a Cell (1) On the STAT editor screen, move the cursor to the cell you want to edit. (2) Input the new data value or expression, and then press =. Important! · Note that you must totally replace the existing data of the cell with new input. You cannot edit parts of the existing data. Deleting a Line (1) On the STAT editor screen, move the cursor to the line you want to delete.

(2) Press Y. Inserting a Line (1) On the STAT editor screen, move the cursor to the line that will be under the line you will insert. (2) Press 11(STAT)3(Edit). (3) Press I(Ins). Important! · Note that the insert operation will not work if the maximum number of lines allowed for the STAT editor screen are already used. Deleting All STAT Editor Contents (1) Press 11(STAT)3(Edit). (2) Press 2(Del-A). · This clears all of the sample data on the STAT editor screen. Note · Note that you can perform the procedures under "Inserting a Line" and "Deleting All STAT Editor Contents" only when the STAT editor screen is on the display. k

STAT Calculation Screen The STAT calculation screen is for performing statistical calculations with the data you input with the STAT editor screen. Pressing the A key while the STAT editor screen is displayed switches to the STAT calculation screen. The STAT calculation screen also uses Linear format, regardless of the current input/output format setting on the calculator's setup screen. E-46 k Using the STAT Menu While the STAT editor screen or STAT calculation screen is on the display, press 11(STAT) to display the STAT menu. The content to the STAT menu depends on whether the currently selected statistical operation type uses a single variable or paired variables. Single-variable Statistics Paired-variable Statistics STAT Menu Items Common Items Select this menu item: 1Type 2Data 3Edit 4Sum 5Var 6MinMax When you want to do this: Display the statistical calculation type selection screen Display the STAT editor screen Display the Edit sub-menu for editing STAT editor screen contents Display the Sum sub-menu of commands for calculating sums Display the Var sub-menu of commands for calculating the mean, standard deviation, etc. Display the MinMax sub-menu of commands for obtaining maximum and minimum values Single-variable Menu Item Select this menu item: 7Distr When you want to do this: Display the Distr sub-menu of commands for normal distribution calculations · For more information, see "Distr Sub-menu". Paired-variable Menu Item Select this menu item: When you want to do this: Display the Reg sub-menu of commands for regression calculations · For details see "Commands when Linear Regression Calculation (A+BX) Is Selected" and "Commands when Quadratic Regression Calculation (CX2) Is Selected". 7Reg E-47 Single-variable (1-VAR) Statistical Calculation Commands The following are the commands that appear on the sub-menus that appear when you select 4(Sum), 5(Var), 6(MinMax), or 7(Distr) on the STAT menu while a single-variable statistical calculation type is selected. See Appendix <#052> for information about the calculation formula used for each command. Sum Sub-menu (11(STAT)4(Sum)) Select this menu item: 1x2 2x When you want to obtain this: Sum of squares of the sample data Sum of the sample data Var Sub-menu (11(STAT)5(Var)) Select this menu item: 1n 2o 3xn 4xn1 When you want to obtain this: Number of samples Mean of the sample data Population standard deviation Sample standard deviation MinMax Sub-menu (11(STAT)6(MinMax)) Select this menu item: 1minX 2maxX When you want to obtain this: Minimum value Maximum value Distr Sub-menu (11(STAT)7(Distr)) 1 P (2 Q (3 R (4 't This menu can be used to calculate the probability of standard normal distribution.

Normalized variate t is calculated with the expression shown below, using the mean value (o) and population standard deviation value (xn) obtained from the data input on the STAT editor screen. E-48 Standard Normal Distribution P (t) Q (t) R (t) Ot Ot Ot Appendix Single-variable Statistical Calculation <#053> Select single-variable (1-VAR) and input the following data: {1, 2, 3, 4, 5, 6, 7, 8, 9, 10} (FREQ: ON) <#054> Edit the data to the following, using insert and delete: {0, 1, 2, 3, 4, 5, 6, 7, 9, 10} (FREQ: ON) <#055> Edit the FREQ data to the following: {1, 2, 1, 2, 2, 3, 4, 2, 1} (FREQ: ON) · Examples <#056> through <#059> all use the same data as Example <#055>. <#056> Calculate sum of squares of the sample data and sum of the sample data.



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<#057> Calculate number of samples, mean, and population standard deviation. <#058> Calculate minimum value and maximum value. <#059> Performing standard normal distribution approximation on the input sample data (from Example <#055>) produces the probabilities shown below. Distribution probability that is a value less than the normalized variate when the sample value is 3 (P value for normalized variate when X = 3) Distribution probability that is a value greater than the normalized variate when the sample value is 7 (R value for normalized variate when X = 7) Commands when Linear Regression Calculation (A+BX) Is Selected With linear regression, regression is performed in accordance with the following model equation. $y = A + BX$ The following are the commands that appear on the sub-menus that appear when you select 4(Sum), 5(Var), 6(MinMax), or 7(Reg) on the STAT menu while linear regression is selected as the statistical calculation type. See Appendix <#060> for information about the calculation formula used for each command. E-49 Sum Sub-menu (11(STAT)4(Sum)) Select this menu item: 1x2 2x 3y2 4y 5xy 6x3 7x2y 8x4 When you want to obtain this: Sum of squares of the X-data Sum of the X-data Sum of squares of the Y-data Sum of the Y-data Sum of products of the X-data and Y-data Sum of cubes of the X-data Sum of (X-data squares \times Y-data) Sum of biquadrate of the X-data Var Sub-menu (11(STAT)5(Var)) Select this menu item: 1n 2o 3xn 4xn1 5p 6yn 7yn1 When you want to obtain this: Number of samples Mean of the X-data Population standard deviation of the X-data Sample standard deviation of the X-data Mean of the Y-data Population standard deviation of the Y-data Sample standard deviation of the Y-data MinMax Sub-menu (11(STAT)6(MinMax)) Select this menu item: 1minX 2maxX 3minY 4maxY When you want to obtain this: Minimum value of the X-data Maximum value of the X-data Minimum value of the Y-data Maximum value of the Y-data Reg Sub-menu (11(STAT)7(Reg)) Select this menu item: 1A 2B 3r 4m 5n When you want to obtain this: Regression coefficient constant term A Regression coefficient B Correlation coefficient r Estimated value of x Estimated value of y E-50 Appendix Linear Regression Calculation: <#061> to <#064> · Examples <#062> through <#064> all use the data input in Example <#061>.

*1 Estimated Value ($y = 3 m = ?$) *2 Estimated Value ($x = 2 n = ?$) Commands when Quadratic Regression Calculation (CX2) Is Selected With quadratic regression, regression is performed in accordance with the following model equation. $y = A + BX + CX^2$ See Appendix <#065> for information about the calculation formula used for each command. Reg Sub-menu (11(STAT)7(Reg)) Select this menu item: 1A 2B 3C 4m1 5m2 6n When you want to obtain this: Regression coefficient constant term A Linear coefficient B of the regression coefficients Quadratic coefficient C of the regression coefficients Estimated value of x1 Estimated value of x2 Estimated value of y · Sum sub-menu (sums), Var sub-menu (number of samples, mean, standard deviation), and MinMax sub-menu (maximum value, minimum value) operations are the same those for linear regression calculations. Appendix Quadratic Regression Calculation: <#066> to <#068> · Examples <#066> through <#068> all use the data input in Example <#061>. Comments for Other Types of Regression For details about the calculation formula of the command included in each regression type, refer to the indicated calculation formulas (Appendix <#069> to <#073>).

Statistical Calculation Type Logarithmic Regression (ln X) Model Equation Calculation Formula <#069> <#070> $y = A + B \ln X$ e Exponential Regression (e^X) $y = Ae^{BX}$ E-51 BX Statistical Calculation Type ab Exponential Regression ($A \cdot B^X$) Power Regression ($A \cdot X^B$) Inverse Regression (1/X) Appendix Model Equation Calculation Formula <#071> <#072> <#073> $y = ABX$ $y = AX^B$ $y = A + B/X$ Comparison of Regression Curves · The following example uses the data input in Example <#061>. <#074> Compare the correlation coefficient for logarithmic, e exponential, ab exponential, power, and inverse regression. (FREQ: OFF) Appendix <#079> Other Types of Regression Calculation: <#075> to Command Usage Tips · The commands included in the Reg sub-menu can take a long time to execute in logarithmic, e exponential, ab exponential, or power regression calculation when there are a large number of data samples. Base-n Calculations (BASE-N) The BASE-N Mode lets you perform arithmetic calculations, negative value calculations, and logical operations with binary, octal, decimal, and hexadecimal values. All calculations in this section are performed in the BASE-N Mode (N4).

k Number Base Setting and Value Input Use the keys listed below to specify the number base. The key markings used in this section are the ones that are above each key, on the right. Key U c b q Number Base Decimal Hexadecimal Binary Octal Screen Indicator Dec Hex Bin Oct · The current number base setting is indicated in the second line of the display. E-52 · The initial default number base setting when you enter the BASEN Mode is always decimal (DEC). Inputting Values In the BASE-N Mode, you can input values using the currently selected number base. · A Syntax ERROR occurs if you input values that are not allowed for the currently selected number base (such as inputting 2 while binary is selected). · You cannot input fractional values or exponential values in the BASE-N Mode. If a calculation produces a fractional value, the decimal part is cut off. Inputting Hexadecimal Values Use the keys shown below to input the alphabetic letters (A, B, C, D, E, F) required for hexadecimal values. yew s Value Ranges Base Binary Octal {A} {B} {C} {D} c e t F Range Positive: 0000000000000000 < x < 0111111111111111 Negative: 1000000000000000 < x < 1111111111111111 Positive: 0000000000 < x < 1777777777 Negative: 2000000000 < x < 3777777777 Positive: 00000000 < x < 7FFFFFFF Negative: 80000000 < x < FFFFFFFF Decimal 2147483648 < x < 2147483647 Hexadecimal · The allowable calculation range is narrower from binary (16 bits) than it is for the other number systems (32 bits).

· A Math ERROR occurs when a calculation result is outside the applicable range for the number system being used. Specifying the Base during Input The BASE-N Mode lets you override the current default number base setting and input a particular value using a different base. When inputting the value, press 13(BASE) c to display page two of the BASE menu, and then press the number key that corresponds to the base you want to specify.



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Press this key: To specify this number base: 1(d) 2(h) 3(b) 4(o) Decimal (Base 10) Hexadecimal (Base 16) Binary (Base 2) Octal (Base 8) E-53 The key operation below shows how to input a value of 3 using the decimal number base, for example. Ab13(BASE)c1(d)3 The value you input here is decimal number base. Appendix <#080> <#081> <#082> <#083> Calculate $12 + 12$ in binary. Calculate $78 + 18$ in octal. Calculate $1F16 + 116$ in hexadecimal. Convert the decimal value 3010 to binary, octal, and hexadecimal. <#084> Transform the result of $510 + 516$ to binary.

k Negative Number Calculations and Logical Operations To input a negative number calculation or logical operation command, press 13(BASE) to display page one of the BASE menu, and then press the number key that corresponds to the command you want to specify. Press this key: When you want to input this: 1(and) 2(or) 3(xor) Logical operator "and" (logical product), which returns the result of a bitwise AND Logical operator "or" (logical sum), which returns the result of a bitwise OR Logical operator "xor" (exclusive logical sum), which returns the result of a bitwise XOR Logical operator "xnor" (exclusive negative logical sum), which returns the result of a bitwise XNOR "Not(" function, which returns the result of a bitwise complement "Neg(" function, which returns the result of a two's complement 4(xnor) 5(Not) 6(Neg) · Negative binary, octal, and hexadecimal values are produced by taking the binary two's complement and then returning the result to the original number base. With the decimal number base, negative values are displayed with a minus sign. Appendix Examples <#085> through <#090> show examples of calculations with negative binary values and examples of logical operations. Before starting each calculation, be sure to press Ab first.

E-54 Equation Calculations (EQN) All calculations in this section are performed in the EQN Mode (N5). k Equation Types An equation type menu appears when you press N5(EQN) and enter the EQN Mode. Key 1 Menu Item $ax + by = c$ Equation Type Simultaneous Linear Equations with Two Unknowns Simultaneous Linear Equations with Three Unknowns Quadratic Equation Cubic Equation 2 3 4 $ax + by + cz = d$ $aX^2 + bX + c = 0$ $aX^3 + bX^2 + cX + d = 0$ Changing the Current Equation Type Setting Press N5(EQN) to re-enter the EQN Mode. This clears all current EQN Mode input and displays the equation type menu described above. k Inputting Coefficients Use the coefficient editor screen to input the coefficients of an equation.

The coefficient editor screen shows input cells for each of the coefficients required by the currently selected equation type. Simultaneous linear equations with two unknowns Cubic equation Rules for Inputting and Editing Coefficients · Data you input is inserted into the cell where the cursor is located. When you register input into a cell, the cursor moves to the next cell to the right. · When simultaneous linear equations with three unknowns or cubic equation is selected as the equation type, the d column will not be visible on the display when the coefficient editor screen is first displayed. The d column will become visible when you move the cursor to it, which causes the screen to shift. E-55 · The values and expressions you can input on the coefficient editor screen are the same as those you can input in the COMP Mode with Linear format. · Pressing A while inputting data clears your current input. · After inputting data, press =. This registers the value and displays up to six of its digits in the currently selected cell. · To change the contents of a cell, use the cursor keys to move the cursor to the cell and then input the new data.

Initializing All Coefficients to Zero You can clear all coefficients to zero by pressing the A key while inputting values on the coefficient editor screen.

Coefficient Editor Screen Input Precautions Coefficient editor screen precautions are basically the same as those for the STAT editor screen. The only difference is that the first STAT editor screen precaution does not apply in the case of the coefficient editor screen. For details, see "STAT Editor Screen Input Precautions". k Solution Display After inputting and registering values on the coefficient editor screen, press = to display the solution(s) for the equation. · Each press of = displays the next solution, if there is one. Pressing = while the final solution is displayed returns to the coefficient editor screen. · In the case of simultaneous linear equations, you can use f and c to switch the display between the solutions for X and Y (and Z). · When there are multiple solutions for a quadratic or cubic equation, you can use the f and c keys to scroll the display between X1, X2, and X3. The actual number of solutions depends on the equation.

· Pressing A while a solution is displayed will return to the coefficient editor screen. · The display format of solutions is in accordance with the input/output format and complex number display format settings of the calculator's setup screen. · Note that you cannot transform values to engineering notation while an equation solution is displayed. Appendix Equation Calculation: <#091> to <#095> E-56 Matrix Calculations (MATRIX) You can save matrices under the names "MatA", "MatB", and "MatC" in matrix memory. Matrix calculation results are stored in a special Matrix Answer Memory named "MatAns".

All calculations in this section are performed in the MATRIX Mode (N6). k Creating and Managing a Matrix Creating a Matrix and Storing It in Matrix Memory (1) In the MATRIX Mode, press 14(MATRIX)1(Dim). · This displays the matrix selection screen. · Note that the matrix selection screen also appears whenever you enter the MATRIX Mode. (2) Press a number key (1, 2, or 3) to specify the name of the matrix you want to select.

· This displays a screen for configuring dimension settings. c f (3) Press a number key (1 through 6) to specify the matrix dimension you want to use. · Pressing a number key to specify the matrix dimension causes the matrix editor screen to appear. MAT "A" stands for "MatA". (4) Use the matrix editor screen to input each of the elements into the matrix. · Input is subject to the same rules as those that govern the coefficient editor screen in the EQN Mode. For more information, see "Rules for Inputting and Editing Coefficients". · If you want to create another matrix, repeat this procedure from step (1). E-57 Copying the Contents of One Matrix to Another Matrix (1) Use the matrix editor screen to display the matrix you want to copy, or display the Matrix Answer

Memory screen.



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