Sharp EL-9900 Graphing Calculator

Basic Keyboard Activities

General Mathematics

Algebra

Programming

Advanced Keyboard Activities

Algebra

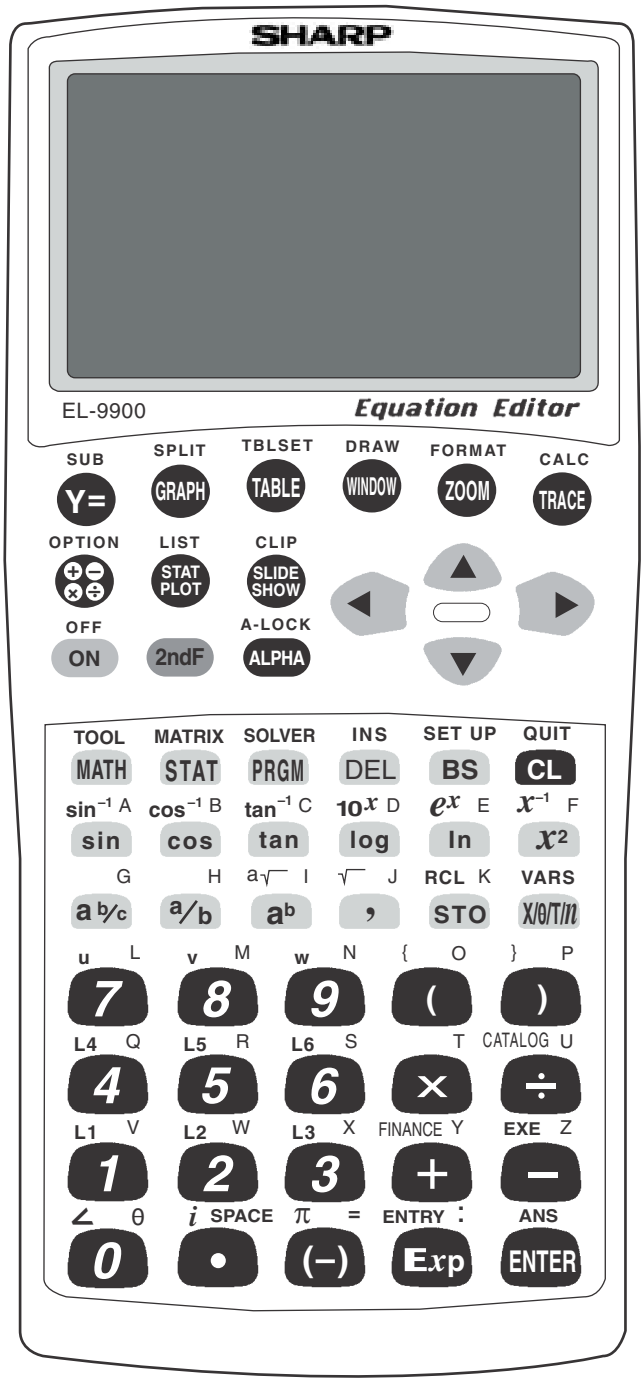
Calculus

Statistics

Trigonometry

Programming

Sharp EL-9900
Graphing Calculator
Advanced Keypad



GRAPHS OF TRIGONOMETRIC FUNCTIONS

Steps for graphing the sine function

1. Turn the calculator on and press [Y=].

2. Press [CL] to remove an old Y1 expression.

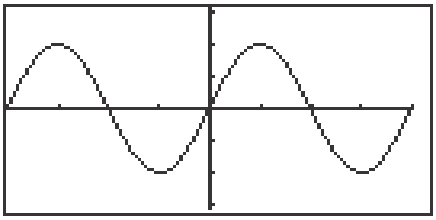
3. Press [▼] [CL] to clear additional expressions.

4. To set up the calculator press [2ndF] [SET UP] [B] **(DRG)** [2] **(Rad)** [E] **(COORD)** [1] **(Rect)** [G] **(EDITOR)** and [1] **(Equation)**.

5. Press [2ndF] [QUIT] again to return to the Y prompts.

6. Enter the sine function ($y = \sin x$) for Y1, by pressing [sin] [X/θ/T/*n*].

7. Enter the viewing window range by pressing [ZOOM] [E] **(TRIG)** and [1] **(sin *x*)**.



Steps for graphing the cosecant function.

1. Press [Y=] [CL] to remove an old Y1 expression.

2. Enter the cosecant function for Y1 by pressing [MATH] [A] **(CALC)** [1] [0] (**csc)** and press [X/θ/T/*n*].

3. Continue to use the sine function's built-in viewing range.

4. Press [GRAPH] to view the graph.

EVALUATING TRIGONOMETRIC FUNCTIONS

Steps for evaluating sin 45° directly

1. Turn the calculator on and press [+ −; × ÷] to access the computation screen.

2. Press [CL] to clear the viewing window of any old expressions.

3. Set the calculator to operate in degrees by pressing [2ndF] [SET UP] [B] **(DRG)** [1] **(Deg)**. Press [2ndF] [QUIT] to exit the menu.

4. Enter and evaluate the expression by pressing [sin] [4] [5] [ENTER] .

Steps for approximating sin ($\frac{\pi}{3}$) graphically

1. Press [Y=] followed by [CL] to clear an old expression for Y1.

2. Enter the function sin *x* by pressing [sin] [X/θ/T/*n*] . Set the calculator to radian mode by pressing [2nd F] [SET UP] [B] (**DRG)** and [2] (**Rad)**. Press [2nd F] [QUIT] to exit the menu.

3. View the graph by pressing [ZOOM] [E] **(TRIG)** [1] **sin *x***.

4. Now, engage the trace by pressing [TRACE] and tracing near $x = \frac{\pi}{3} = 1.047$.

5. With the cursor located near $x = 1.047$, you can zoom in to find a better approximation for the *y* value. Press [ZOOM] [A] **(ZOOM)** [3] **(In)** to zoom in on the cursor.

6. Once again, trace over near $x = 1.047$. Zoom in one more time to see an even better approximation. The y value of .866 approximates sin ($\frac{\pi}{3}$)..

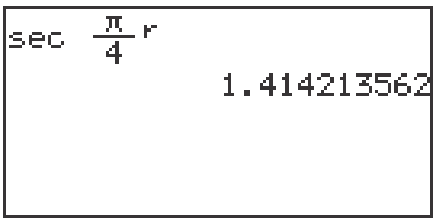
EVALUATING TRIGONOMETRIC FUNCTIONS

Steps for evaluating sec ($\frac{\pi}{4}$) directly in degree mode

1. Press [+ − × ÷] to enter computation mode.

2. Press [2ndF] [SET UP] to verify the calculator is in degree mode. If it is not, change it to degree mode. Press [2ndF] [QUIT] to exit the menu.

3. Enter and evaluate the expression by pressing [MATH] [A] **(CALC)** [0] [9] **(sec)** [2ndF] [π] [a/b] [4] [▶] [MATH] [E] **(ANGLE)** [4] **(r)** and pressing [ENTER].



Steps for approximating tan 20° graphically

1. Press [Y=] and press [CL] to remove an old expression for Y1.

2. Press [2ndF] [SET UP] to verify the calculator is in degree mode. If it is not, change it. Press [2ndF] [QUIT] to exit the menu.

3. Enter the function tan *x* for Y1 by pressing [tan] [X/θ/T/*n*].

4. Instead of graphing the function in the default viewing window for tangent, press [WINDOW] adjust the Xmin and Xmax to 10° and 30° (value of interest ± 10°) respectively to start out closer to the value of interest. Set the Xscl = 1. Press [ZOOM] [A] **(ZOOM)** and [1] **(Auto)** to view the graph.

5. Now, engage the trace by pressing [TRACE]. Notice the tracer appears at *x* = 20° since it is the middle of the *x* values. The approximate for tan 20° is .36397.

GRAPHICAL VERIFICATION OF FORMULAS AND IDENTITIES

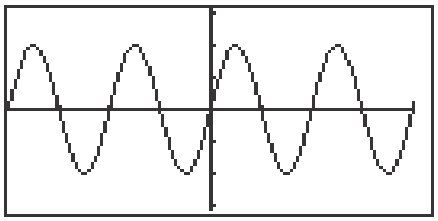
1. Verify the double angle formula $\sin 2\theta = 2 \sin \theta \cos \theta$, by graphing Y1 = sin ($2x$) and Y2 = 2 sin x cos x and show that they are in fact the same graph.

2. Turn the calculator on and press [Y=] . Press [CL] to clear Y1 of an old expression. Press [▼] [CL] to clear additional expressions.

3. Make sure the calculator is in radian mode by pressing [2ndF] [SET UP] , [B] **(DRG)** and [2] **(Rad)**. Press [2ndF] [QUIT] to exit the menu.

4. Now enter sin ($2x$) for Y1 by pressing [sin] [(] [2] [X/θ/T/n] [)] [ENTER] and the 2 sin x cos x for Y2 by pressing [2] [sin] [X/θ/T/n] [cos] [X/θ/T/n] [ENTER] .

5. Set your viewing window by pressing [ZOOM] [E] **(TRIG)** [1] **(sin x)**.



6. They appear as one graph. An invalid formula or identity would result in two graphs.

AMPLITUDE

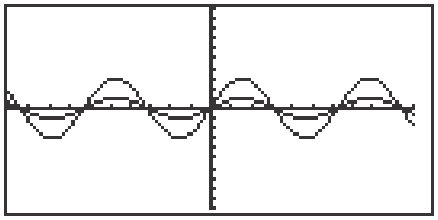
Investigate changes in amplitude.

1. Turn the calculator on and press [Y=] and [CL] to clear old expressions.

2. Enter y = sin x for Y1 by pressing [sin] [X/θ/T/*n*] .

3. Enter y = 3 sin x for Y2 by pressing [3] [sin] [X/θ/T/*n*] .

4. Press [ZOOM] [A] **(ZOOM)** [5] **(Default)** to view the graphs.



5. Notice that the 3 in front of the sine function makes the curve oscillate between 3 and -3 instead of 1 and -1.

6. Press [Y=] [▼] [CL] to clear Y2. Enter y= -2 sin x for Y2 by pressing [(-)] [2] [sin] [X/θ/T/*n*] .

7. Press [GRAPH] to view the graphs. Notice that the -2 in front of the sine function makes the curve reflect on the x-axis and makes the curve oscillate between -2 and 2.

PERIOD AND PHASE SHIFT

Investigate the change in a trigonometric function by multiplying the argument θ by 2.

1. Press [Y=] [CL] to access and clear Y1 of an old expression.

2. Make sure the calculator is in radian mode by pressing [2ndF] [SET UP], [B] **(DRG)** and [2] **(Rad)**. Press [2ndF] [QUIT] to exit the menu.

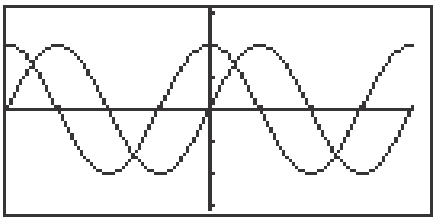
3. Now, enter sin x for Y1 by pressing [sin] [X/θ/T/*n*] [ENTER] and the sin (2*x*) for Y2 by pressing [CL] [sin] [(] [2] [X/θ/T/*n*] [)] [ENTER].

4. Set your viewing window by pressing [ZOOM] [E] **(TRIG)** and [1] **(sin *x*)**. Note the change in the second graph versus the first graph. Engage the trace to show the period has changed from 2π to π.

Investigate the change in a trigonometric function by subtracting $\frac{3\pi}{2}$ to the argument θ.

1. Press [Y=] [▼] [CL] and enter Y= sin (X - 3π/2) for Y2 by pressing [sin] [(] [X/θ/T/*n*] [–] [3] [2ndF] [π] [÷] [2] [)] [ENTER].

2. Press [GRAPH] to view the graphs. Observe and note the changes in sin x when you change the phase shift.



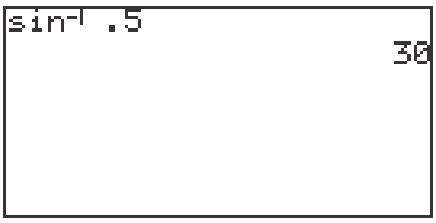
INVERSE TRIGONOMETRIC FUNCTIONS

To compute the inverse sine function in degrees:

1. Turn the calculator on and press [+ −] [× ÷] [CL] to enter computation mode.

2. Change to degree mode by pressing [2ndF] [SET UP] [B] **(DRG)** and [1] **(Deg)**. Press [2ndF] [QUIT] to exit the menu.

3. Find $\sin^{-1}$ (.5) by pressing [2ndF] [$\sin^{-1}$] [•] [5] [ENTER]. The answer of 30° is shown below.



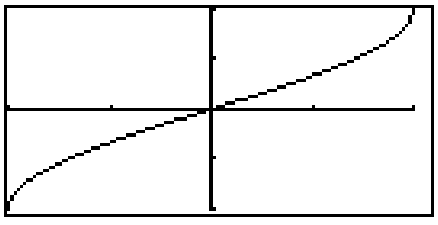
To graph the inverse sine function in degrees:

1. Press [Y=] [CL] to access and clear the Y1 expression.

2. Press [ENTER] [CL] to clear additional Y expressions.

3. Enter $\sin^{-1} x$ for Y1 by pressing [2ndF] [$\sin^{-1}$] [X/θ/T/*n*] [ENTER].

4. Set your viewing window by pressing [ZOOM] [E] **(TRIG)** and [4] **($\sin^{-1} x$)**.



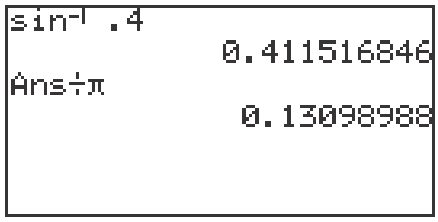
INVERSE TRIGONOMETRIC FUNCTIONS

To compute the inverse sine function in radians:

1. Turn the calculator on and press [⊞] [CL] to access and clear the home screen.

2. Change to radian mode by pressing [2ndF] [SET UP] [B] **(DRG)** and [2] **(Rad)**. Press [2ndF] [QUIT] to exit the menu.

3. Find $\sin^{-1}$ (.4), press [2ndF] [$\sin^{-1}$] [•] [4] [ENTER]. The answer of .4115 radians is shown below. To find the result in terms of π press [÷] [2ndF] [π] [ENTER].

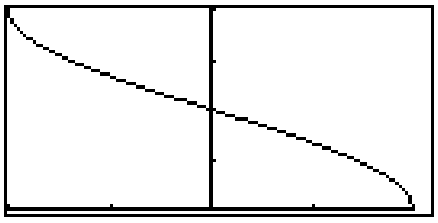


To graph the inverse cosine function in radians:

1. Press [Y=] [CL] to access and clear the Y1 prompt.

2. Enter $\cos^{-1} x$ for Y1 by pressing [2ndF] [$\cos^{-1}$] [X/θ/T/*n*] [ENTER].

3. Set your viewing window by pressing [ZOOM] [E] **(TRIG)** and [5] **($\cos^{-1} x$)**.



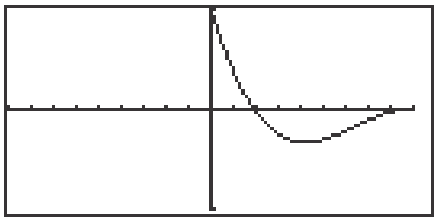
SOLVING TRIGONOMETRIC EQUATIONS

To solve a trigonometric equation graphically using the zoom feature:

1. Turn the calculator on and press [Y=] [CL] to access and clear Y1 of an old expression. Set the calculator to degree mode by pressing [2ndF] [SET UP] [B] **(DRG)** and [1] **(Deg)**. Press [2ndF] [QUIT] to exit the menu.

2. To find the solutions of $3\sin^2 x - 4\sin x + 1 = 0$, press [3] [(] [sin] [X/θ/T/*n*] [)] [a^b] [2] [▶] [–] [4] [sin] [X/θ/T/*n*] [+] [1] [ENTER].

3. Set your viewing window to the principal values for sine by pressing [WINDOW] [(–)] [9] [0] [ENTER] [9] [0] [ENTER] [1] [0] [ENTER] [(–)] [1] [ENTER] [1] [ENTER] [1] [ENTER]. Press [GRAPH] to view the graph.



4. To save this original graph and viewing window, press [ZOOM] [G] **(STO)** and [1] **(StoWin)**.

5. Set the zoom factors by pressing [ZOOM] [B] **(FACTOR)** [ENTER] [5] [ENTER] [5] [ENTER]. Press [GRAPH] to exit the menu.

6. To find the left intercept press [TRACE] and move the cursor near this intercept by continuing to press the [▶] key.

7. Now, press [ZOOM] [A] **(ZOOM)** and [3] **(In)** to zoom in on the left intercept and solution of this equation. Press [TRACE] and [◀] to trace near and approximate the intercept.

8. Return to the original screen by pressing [ZOOM] [H] **(RCL)** and [1] **(RclWin)**. Trace to find the right intercept.

SOLVING TRIGONOMETRIC EQUATIONS

To solve a trigonometric equation graphically using the CALC feature:

1. Press [Y=] [CL] to access and clear Y1. Set the calculator to radian mode by pressing [2ndF] [SET UP] [B] **(DRG)** and [2] **(Rad)**.
   Press [2ndF] [QUIT] to exit the menu.

2. To find the solutions of $2\sin^2 x - \cos x - 1 = 0$, press [2] [(] [sin] [X/θ/T/*n*] [)] [a^b] [2] [▶] [–] [cos] [X/θ/T/*n*] [–] [1] [ENTER] .

3. Set your viewing window by pressing [WINDOW] [(–)] [2ndF] [π] [÷] [2] [ENTER] [2ndF] [π] [ENTER] [2ndF] [π] [÷] [4] [ENTER] [(–)] [1] [ENTER] [1] [ENTER] [1] [ENTER] . Press [GRAPH] to view the graph.

4. To "calculate" an intercept (solution), press [2ndF] [CALC] [5] **(X_Incpt)**.
   You can calculate the other two intercepts by pressing [2ndF] [CALC] [5] **(X_Incpt)** again.

To solve an equation with functions on both the left and right sides:

1. Press [Y=] [CL] to access and clear Y1 of an old expression. To find the solutions of $2\tan x \sin x + 2\sin x = \tan x + 1$, you will enter the left side as Y1, by pressing [2] [tan] [X/θ/T/*n*] [sin] [X/θ/T/*n*] [+] [2] [sin] [X/θ/T/*n*] [ENTER] .

2. Enter the right side as Y2, by pressing [tan] [X/θ/T/*n*] [+] [1] [ENTER] .

3. Set your viewing window by pressing [WINDOW] [(–)] [2ndF] [π] [÷] [2] [ENTER] [2ndF] [π] [ENTER] [2ndF] [π] [÷] [4] [ENTER] [(–)] [2] [ENTER] [2] [ENTER] [1] [ENTER] . Press [GRAPH] to view the graph.

4. There appears to be four solutions to the equation. To "calculate" the intersections (solutions), press [TRACE] , move the tracer right until it appears on the screen. Next, press [2ndF] [CALC] [2] **(Intsct)**.
   Do this several times.

APPLICATIONS WITH RIGHT TRIANGLES

Steps for using the calculator to solving applications with right triangles

1. Turn the calculator on and set it to degree mode by pressing [2ndF] [SET UP], [B] **(DRG)** [1] **(Deg)**. Press [2ndF] [QUIT] to exit the set up menu.

2. Given a right triangle with A = 3 and C = 6, find B and θ using the SOLVER. To access the SOLVER, press [2ndF] [SOLVER], and press [CL] to delete any equation that may appear on the screen.

3. Type in the equation $\sin\theta = \frac{A}{C}$ with the keystrokes [sin] [ALPHA] [θ] [ALPHA] [=] [a/b] [ALPHA] [A] [▶] [ALPHA] [C].

4. Press [2ndF] [SOLVER] [A] **(METHOD)** [1] **(Equation)** to choose the Equation solver. Press [ENTER] and see the list of variables.

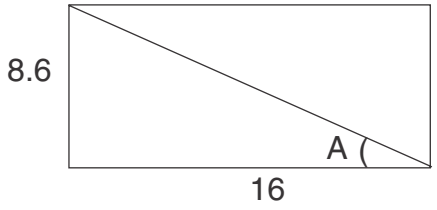
5. Press [▼] to move the blinking cursor over the A and press [3] [ENTER]. Type in the value of C by pressing [6] [ENTER]. Solve for θ by pressing [▲] [▲] [2nd] [EXE].

6. To use the SOLVER to find B, edit the current equation to the new equation $\cos\theta = \frac{B}{C}$. Do this by pressing [CL] [CL] to display the current equation $\sin\theta = \frac{A}{C}$. With the cursor over the s in sin, press [cos] to insert cos. Press [DEL] to delete sin. Press [▶] [▶] [▶] to move the cursor over the A in the numerator of the fraction. Press [ALPHA] [B] to insert B. Press [DEL] to delete A.

7. Press [ENTER] to see the variable list. The value for θ and C will remain as before. Press [▼] to position the cursor over the B and press [2ndF] [EXE] to find B.

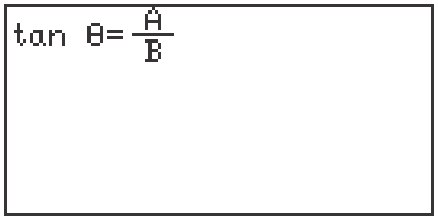
APPLICATIONS WITH RIGHT TRIANGLES

A rectangle has a length 16 cm and a width 8.6 cm. Find the degree measure of angle A. Determine the length of the diagonal of the rectangle.



1. Press [+ − × ÷] [2ndF] [SOLVER] to access the SOLVER, and press [CL] to delete the equation that is on the screen.

2. Enter the equation $\tan\theta = \frac{A}{B}$ by pressing [tan] [ALPHA] [θ] [ALPHA] [=] [a/b] [ALPHA] [A] [▶] [ALPHA] [B] .



3. Press [ENTER] to view the variable list.

4. Enter 8.6 for A and 16 for B. (The value of θ will be listed as the one that was used in the previously entered equation.)

5. Position the cursor over θ and press [2ndF] [EXE] to find θ.

6. To determine the length of the diagonal of the rectangle, return to the equation by pressing [CL] [CL] and edit the current equation to read sin θ = A/C.

7. Press [ENTER] to see the variable list. The value of θ should be as before, so enter 8.6 for A and solve for C.

LAW OF SINES

Use the Graphic Solver with the Law of Sines.

1. Set the calculator to degrees by pressing [2ndF] [SET UP] [B] **(DRG)** and [1] **(Deg)**. Press [2ndF] [QUIT] to exit the set up screen.

2. To access the SOLVER, press [2ndF] [SOLVER] [CL]. Enter $\frac{\sin A}{X} = \frac{\sin B}{Y}$ by pressing [a/b] [sin] [ALPHA] [A] [▶] [ALPHA] [X] [▶] [ALPHA] [=] [a/b] [sin] [ALPHA] [B] [▶] [ALPHA] [Y].

3. Store it into memory by pressing [2ndF] [SOLVER] [C] **(SAVE)** pressing [ENTER], and typing in LAWSINES. Press [ENTER] to store the formula.

4. Press [2ndF] [SOLVER] [A] **(METHOD)** [3] **(Graphic)** to choose the Graphic Solver. Press [ENTER] for the list of variables.

5. With the blinking cursor over the A, type in 95 and press [ENTER]. Next, type 15 for *x*, the length of the side opposite the 95°, and press [ENTER]. Enter 48 for B in the same manner. Solve for *y* by positioning the blinking cursor over the *y* and press [2ndF] [EXE].

6. You must enter the range values for the unknown (from BEGIN to END) within which you expect to find the solution. Let the BEGIN = 5 by pressing [5] [ENTER]. Enter a value for END that you do not expect *y* to exceed, say 25, by pressing [2] [5] [ENTER]. Press [2ndF] [EXE] and an autoscaled plot will be drawn showing graphs of the left and right sides of the current equation.

7. The calculator will now display a box in the center of the viewing screen while it looks for the intersection of the two graphs. The solution is displayed at the bottom of the screen.

LAW OF COSINES

Use the Newton Solver with the Law of Cosines.

1. Access the SOLVER with [2ndF] [SOLVER] (or press [CL] twice if you are still in the SOLVER). Press [CL] to delete the current equation. Return to the Equation Solver by pressing [2ndF] [SOLVER] [A] **(METHOD)** and [1] **(Equation)**.

2. Next enter the Law of Cosines by pressing [ALPHA] [Z] [x^2] [ALPHA] [=] [ALPHA] [X] [x^2] [+] [ALPHA] [Y] [x^2] [–] [2] [ALPHA] [X] [×] [ALPHA] [Y] [×] [cos] [ALPHA] [θ].

3. Store this equation in the calculator.

4. Given a triangle in which two sides of lengths 13 cm and 8 cm enclose a 50° angle. Find the length of the third side.

5. Press [ENTER] to view the list of variables. Press [▼] to position the cursor on X and enter 13. Next, enter 8 for Y and 50 for θ. Press [▲] to move the cursor over Z and press [0] [ENTER].

6. Press [2ndF] [EXE] to solve for Z. Notice that the SOLVER has automatically changed to the Newton Solver. You should supply an initial estimate of the solution in the START position (0 is the default value) and a step size STEP (.001 is the default value).

7. Press [2ndF] [EXE] to find the solution. (If you receive an error message, try changing the START value or increasing the STEP value.)

8. Notice the left and right sides of the equation are displayed as equal values, and the L – R = 0.

AREA OF A TRIANGLE

1. Set the calculator to operate in degrees with [2ndF] [SET UP] [B] **(DRG)** and [1] **(Deg)**. Press [2ndF] [QUIT] to exit the set up screen.

2. Access the SOLVER by pressing [2ndF] [SOLVER] , and press [CL] to delete any equation on the screen.

3. Type in the equation A = $\frac{1}{2}$ B•H with the keystrokes: [ALPHA] [A] [ALPHA] [=] [a/b] [1] [▶] [2] [▶] [ALPHA] [B] [×] [ALPHA] [H]

4. Press [2ndF] [SOLVER] [A] **(METHOD)** [1] **(Equation)** to choose the Equation solver. Press [ENTER] to see the list of variables for your equation.

5. Find the area of a triangle with base = 4 and height = 8.35. Use [▼] to move the blinking cursor over B and type in 4. Type in 8.35 for H and press [ENTER] . Press [▲] twice to move the prompt to the A variable. Press [2ndF] [EXE] to find the area of 16.7.

6. Save the formula by pressing [2ndF] [SOLVER] [C] **(SAVE)**. Enter a name and press [ENTER] .

7. Enter A = $\frac{1}{2}$ B•C•sin θ by pressing [CL] a couple times to return to and delete the current equation. Type in the equation with the keystrokes: [ALPHA] [A] [ALPHA] [=] [a/b] [1] [▶] [2] [▶] [ALPHA] [B] [×] [ALPHA] [C] [×] [sin] [ALPHA] [θ] .

8. Consider the triangle where sides of lengths 4.8 and 5.73 enclose a 47° angle. Press [ENTER] to access the variable list, enter 5.73 for B, 4.8 for C (or vice-versa), and 47 for θ. Move the cursor to the A variable. Press [2ndF] [EXE] to solve for the area.

AREA OF A TRIANGLE (continued)

9. Continue with the formula and press [2ndF] [SOLVER] [A] **(METHOD)** and [3] **(Graphic)** to choose the Graphic solver.

10. To start the problem from the beginning, set A to 0. Move the cursor to the A variable and press [2ndF] [EXE] to see the Graphic solver variable range screen.

11. Since area is always nonnegative, 0 could be used for BEGIN. Enter END a value that you do not expect area to exceed, say 25. (A little bit of estimation helps here! If your value for END is too small, increase it and try again.)

12. Press [2ndF] [EXE] and an autoscaled graph of the two sides of the equation is drawn and the solution is obtained.

13. Enter Heron's formula, $A = \sqrt{[S(S-X)(S-Y)(S-Z)]}$, press [CL], and type the following: [ALPHA] [A] [ALPHA] [=] [2ndF] [$\sqrt{\ }$] [ALPHA] [S] [(] [ALPHA] [S] [–] [ALPHA] [X] [)] [(] [ALPHA] [S] [–] [ALPHA] [Y] [)] [(] [ALPHA] [S] [–] [ALPHA] [Z] [)].

14. Note that the square root symbol extends over the entire right hand side of the equation, automatically grouping the expression under it.

15. You could enter the semiperimeter, $S = \frac{1}{2}(X + Y + Z)$, in a separate formula in the SOLVER, but it is probably easier to find the value of S in the computation mode and then use Heron's formula in the SOLVER. Press [ENTER] to view the variable list.

16. Use Heron's formula to find the area of a triangle with three sides of length 7, 8, and 9. The value for S will be 12. Enter these into the solver and press [2ndF] [EXE] to find the area.

AREA OF A CIRCULAR SECTOR

A lawn sprinkler is set so that the region of the lawn that is watered is approximately a sector of a circle of radius 6 feet. If the central angle of the sector is $\frac{\pi}{5}$ radians, find the area of the region that is watered by the sprinkler.

1. Set the calculator to radian mode by pressing [2ndF] [SET UP] [B] **(DRG)** and [2] **(Rad)**. Press [2ndF] [QUIT] to exit the set up screen.

2. Access the SOLVER by pressing [⊞⊟ / ⊠÷] [2ndF] [SOLVER]. Press [CL] to delete any equation that appears on the screen.

3. Type in the equation A= $\frac{1}{2}$ $R^2\theta$ by pressing [ALPHA] [A] [ALPHA] [=] [1] [a/b] [2] [▶] [ALPHA] [R] [x^2] [ALPHA] [θ].

4. Use the Equation solver by pressing [2ndF] [SOLVER] [A] **(METHOD)** and [1] **(Equation)**. Press [ENTER] and see the list of variables.

5. Use [▼] to place the cursor over R, type in 6, and press [ENTER]. Type in θ by pressing [2ndF] [π] [÷] [5] [ENTER]. Press [▲] twice to place the cursor on the A variable. Press [2ndF] [EXE] to find the area in square feet.

6. Use the Newton solver by pressing [2ndF] [SOLVER] [A] **(METHOD)** and [2] **(Newton)**. Reset A to 0 to start the problem from the beginning. The values of R and O are correct for this problem, so use [▲] to place the cursor over the A variable and press [2ndF] [EXE] to view the Newton solver screen.

7. Since area is never negative, you could set START = 0. Leave the STEP size as .001 and remember that you should change it to a slightly larger value if an error message results. Press [2ndF] [EXE] to find the area in square feet.

AREA OF A CIRCULAR SECTOR (continued)

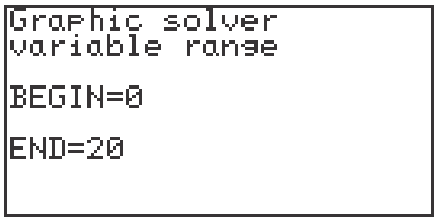
8. Continue the problem and find the area using the Graphic Solver.

9. Press [2ndF] [SOLVER] [A] **(METHOD)** [3] **(Graphic)**.

10. Reset A to 0 to start the problem from the beginning.

11. Place the cursor on the A variable and press [2ndF] [EXE] .

12. Recall that BEGIN and END are the lower and upper values between which you feel the solution will lie. Enter a 20 for END so that the intersection of the two graphs is visible on the screen.



13. Press [2ndF] [EXE] to find the area.