

Sharp EL-9200C Sharp EL-9300C

Quadratic Formula Program

This program will display the solutions of a quadratic equation or the words “No Real Solution.” To use the program, write the quadratic equation in general form and enter the values of a , b , and c . This program gives both real and complex answers.

```
quadratic
-----COMPLEX
Print "ax2+bx+c=0"
Input a
Input b
Input c
d=b2-4a*c
x1=(-b+√d)/(2a)
x2=(-b-√d)/(2a)
Print x1
Print x2
End
```

Graph Reflection Program

This program will graph a function f and its reflection in the line $y = x$. To use this program, replace $f(X)$ with your expression in X .

```
reflection
-----REAL
Goto top
Label equation
Y=f(X)
Return
Label rng
xmin=-10
xmax=10
xstp=(xmax2xmin)/10
ymin=2xmin/3
ymax=2xmax/3
ystp=xstp
Range xmin,xmax,xstp,ymin,ymax,ystp
Return
Label top
Gosub rng
Graph X
step=(xmax-xmin)/(94*2)
X=xmin
Label 1
Gosub equation
Plot X,Y
Plot Y,X
X=X+step
If X<=xmax Goto 1
End
```

Systems of Linear Equations Program

This program will display the solution of a system of two linear equations in two variables of the form

$$ax + by = c$$

$$dx + ey = f$$

if a unique solution exists. Equations must be entered in the form: $AX + BY = C$; $DX + EY = F$. Uppercase letters are used so that the values can be accessed in the calculation mode of the calculator.

```
solve
-----REAL
Print "AX+BY=C"
Input A
Input B
Input C
Print "DX+EY=F"
Input D
Input E
Input F
If A*E-D*B=0 Goto 1
X=(C*E-B*F)/(A*E-D*B)
Y=(A*F-C*D)/(A*E-D*B)
Print X
Print Y
End
Label 1
Print "no unique solution"
End
```

Visualizing Row Operations Program not available

Evaluating an Algebraic Expression Program

This program can be used to evaluate an algebraic expression in one variable at several values of the variable. To use this program, replace $f(X)$ with your expression in X .

```
evaluate
-----REAL
Goto top
Label equation
Y=f(X)
Return
Label top
Input X
Gosub equation
Print Y
Goto top
End
```

Adding Vectors Graphically Program

This program will sketch two vectors in standard position. Using the parallelogram law for the vector addition, the program also sketches the vector sum. Be sure to set an appropriate viewing rectangle.

```
addvect
-----REAL
ClrG
Input a
Input b
Input c
Input d
Line 0,0,a,b
Line 0,0,c,d
e=a+c
f=b+d
Line 0,0,e,f
Line a,b,e,f
Line c,d,e,f
Wait
End
```

Graphing a Sine Function Program

This program will simultaneously draw a unit circle and the corresponding points on the sine curve. After the circle and sine curve are drawn, you can connect the points on the unit circle with their corresponding points on the sine curve by pressing .

```
sineshow
-----REAL
m=sin-1 1/( $\pi/2$ )
Range -2.25, $\pi/2$ ,3,-1.19,1.19,1
step= $\pi/15$ 
 $\theta=0$ 
xco=-.25
xso=0
yo=0
Label 1
 $\theta=\theta+step$ 
xc=cos(m $\theta$ )-1.25
xs= $\theta/4$ 
y=sin (m $\theta$ )
Line xco,yo,xc,y
Line xso,yo,xs,y
xco=xc
xso=xs
yo=y
If  $\theta < (2\pi)$  Goto 1
step= $\pi/6$ 
 $\theta=0$ 
Label 2
 $\theta=\theta+step$ 
xc=cos (m $\theta$ )-1.25
xs= $\theta/4$ 
y=sin (m $\theta$ )
Line xc,y,xs,y
Wait
If  $\theta < 2\pi$  Goto 2
End
```

Finding the Angle Between Two Vectors Program

This program will sketch two vectors and calculate the measure of the angle between the vectors. Be sure to set an appropriate viewing rectangle. Set the calculator to degree mode before running the program.

```
vecangl
-----REAL
ClrG
ClrT
Print"enter (a,b)"
Input a
Input b
ClrT
Print"enter (c,d)"
Input c
Input d
Line 0,0,a,b
Line 0,0,c,d
Wait
e=a*c+b*d
u= $\sqrt{a^2+b^2}$ 
v= $\sqrt{c^2+d^2}$ 
t= $\cos^{-1}(e/(u*v))$ 
Print t
End
```