



# Graphing Calculator Investigation

A Follow-Up of Lesson 10-4

Sharp EL-9900

## Solving Quadratic-Linear Systems

Since you can graph multiple functions on a graphing calculator, it is a useful tool when finding the intersection points or solutions of a system of equations in which one equation is quadratic and one is linear.

Solve the following quadratic-linear system of equations.

$$y + 1 = x$$
$$y = -x^2 + 2x + 5$$

**Step 1** Solve each equation for  $y$ .

- $y + 1 = x$   
 $y = x - 1$
- $y = -x^2 + 2x + 5$

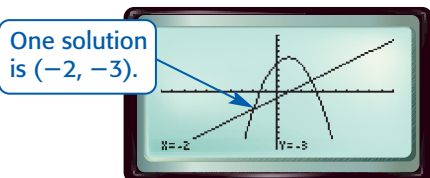
**Step 2** Graph the equations on the same screen.

- Enter  $y = x - 1$  as  $Y_1$ .
- Enter  $y = -x^2 + 2x + 5$  as  $Y_2$ .
- Graph both in the standard viewing window.

**Step 3** Approximate the intersection point.

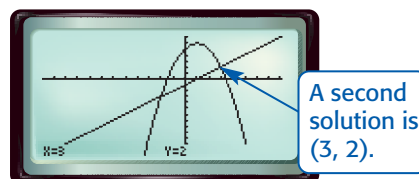
- Use the intersect option on the CALC menu to approximate the first intersection point.

KEYSTROKES:  $\boxed{2\text{nd F}}$  [CALC] 2



**Step 4** Approximate the other intersection point.

- Use the intersect option on the CALC menu to approximate the other intersection point.



Thus, the solutions of the quadratic-linear system are  $(-2, -3)$  and  $(3, 2)$ .

### Exercises

Use the intersect feature to solve each quadratic-linear system of equations. State any decimal solutions to the nearest tenth.

- $y = -2(2x + 3)$   
 $y = x^2 + 2x + 3$   $(-3, 6)$
- $y - 5 = 0$   
 $y = -x^2$  no solution
- $1.8x + y = 3.6$   
 $y = x^2 - 3x - 1$   $(-1.6, 6.5), (2.8, -1.5)$
- $y = -1.4x - 2.88$   
 $y = x^2 + 0.4x - 3.14$   $(-1.9, -0.2), (0.1, -3.1)$
- $y = x^2 - 3.5x + 2.2$   
 $y = 2x - 5.3625$   $(2.8, 0.1)$
- $y = 0.35x - 1.648$   
 $y = -0.2x^2 + 0.28x + 1.01$   
 $(-3.8, -3.0), (3.5, -0.4)$



[www.algebra1.com/other\\_calculator\\_keystrokes](http://www.algebra1.com/other_calculator_keystrokes)