Graph this system of equations on the graphing calculator:

$y = x^2 + 2x - 8$

$y = -x^2 + 3x + 7$

What is the solution to this system of equations?

Graph equations separately and find points of intersection (answers are the x-coordinates only). $x = -2.5 , 3$

How could you solve this system of quadratic equations without graphing?

$y = x^2 + 2x - 8$

$y = -x^2 + 3x + 7$

Solve using substitution.

$-x^2 + 3x + 7 = x^2 + 2x - 8$

$0 = 2x^2 - x - 15$

$0 = (2x + 5)(x - 3)$

$x = -5/2 , 3$

How many solutions could a system of quadratic equations have?

What would the graph of each look like?

No Solutions →

two Solutions →

One Solution →

Many Solutions

Same parabolas.

Simplify each.

1. $\sqrt{24}$

$= \sqrt{4 \cdot 6}$

$= 2\sqrt{6}$

2. $\sqrt{150}$

$= \sqrt{25 \cdot 6}$

$= 5\sqrt{6}$

$\sqrt{50} =$

What's the difference?

$\sqrt{50} = 5\sqrt{2}$ → Exact Value

$\sqrt{50} = 7.0711$ → Approximate Value or Rounded Value

Simplify each:

1. $(18)^2 = 324$
2. $(-18)^2 = 324$
3. What are the square roots of 324?

   ± 18
4. Every positive number has how many square roots? Two
5. Find the square roots of 729 ± 27
6. What is the only number that has only one square root? Zero
7. What numbers have no real square roots? Negative #'s

Solve this equation: $x^2 = 625$

$x = \pm 25$

Principal Square Root:

When a number has two square roots, the positive root is called the Principal Square Root.

$\sqrt{}$

The radical symbol means the Principal Square Root.

What symbol means the negative square root? $-\sqrt{}$

What symbol means both square roots? $\pm\sqrt{}$

1. Solve. $\frac{2x^2}{2} = \frac{288}{2}$

   $x^2 = 144$

   $\sqrt{144} = \pm 12$
2. A square has an area of 196 in^2. Find the length of each side.

   $\sqrt{in^2} = \sqrt{196}$

   $in = \pm 14$ → 14

   -14 doesn't make sense for the length of a side of square.

Solving Quadratic Equations using Square Roots:

- Only when b=0
- Get x^2 or $(\ )^2$ by itself on one side of the = sign
- Take the square root of both sides

Solve this equation using square roots:

$5x^2 - 3 = 42$

$+3 \quad +3$

$\frac{5x^2}{5} = \frac{45}{5}$

$\sqrt{x^2} = \sqrt{9}$

$x = \pm 3$

Solve

$2x^2 - 1 = 149$

$\frac{2x^2}{2} = \frac{150}{2}$

$\sqrt{x^2} = \sqrt{75}$

$x = \sqrt{25 \cdot 3}$

$x = \pm 5\sqrt{3}$