

Algebra 1 9.2

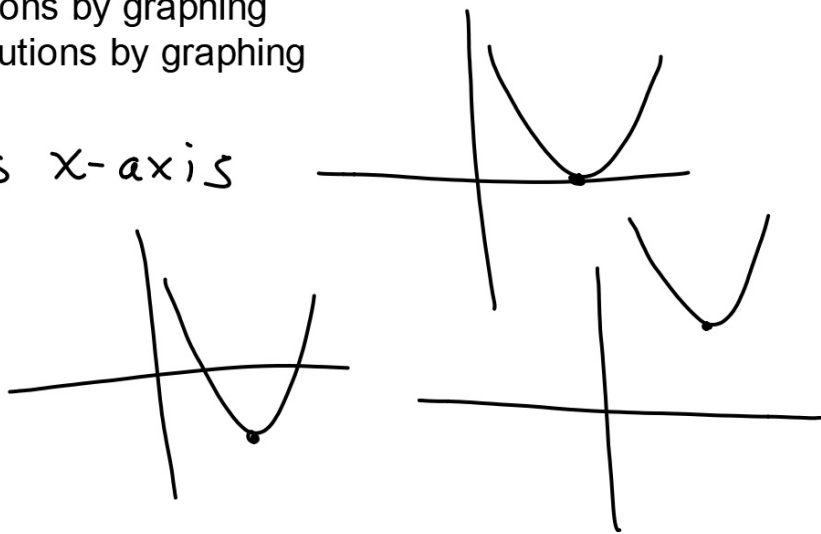
Solve quadratic equations by graphing

Estimate quadratic solutions by graphing

Solution
Root
x-intercept

} cross x-axis

Double root
standard form
equation
related function



Whiteboards

Matching activity (if time)

(29)

p. 558

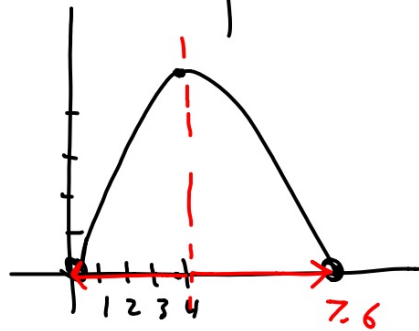
$$0 = -16x^2 + 122x$$

$$x = \frac{-122}{2 \cdot (-16)}$$

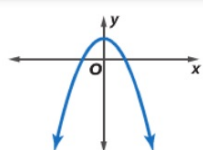
$$x = \frac{-122}{-32}$$

$$x \approx 3.81$$

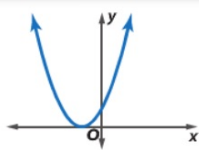
	$-16t \cdot t + 122 \cdot t$	
3.8	$-231.04 + 463.6$	232.5



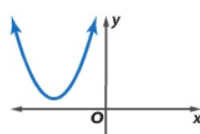
Key Concept Solutions of Quadratic Equations



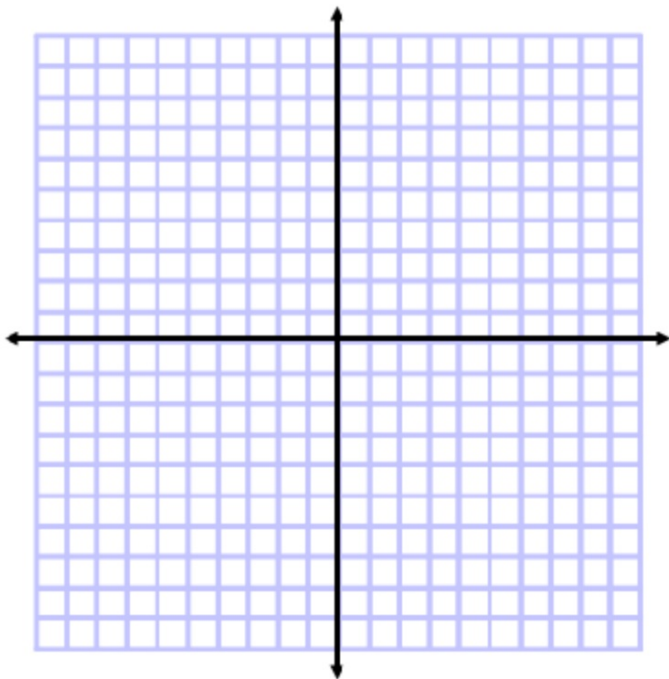
two unique real solutions



one unique real solution



no real solutions



Solve by graphing: Where does the graph cross the x-axis?

x-intercept(s)

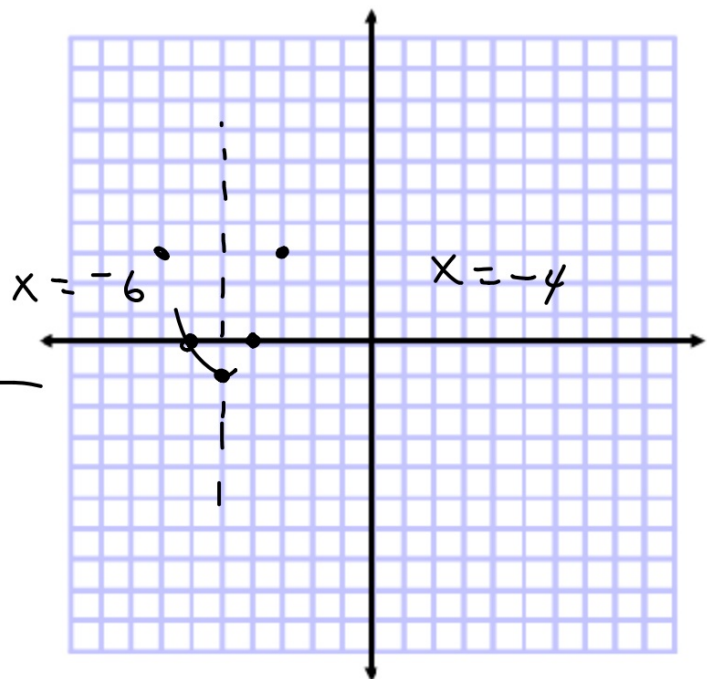
1. Rearrange as necessary ($= 0$)
2. Graph the related function
3. Answer the question

$$y = x^2 + 10x + 24$$

Solve by graphing
 $x^2 + 10x + 24 = 0$

$$X = \frac{-10}{2 \cdot 1} = -5$$

	$x \cdot x + 10 \cdot x + 24$	
$\star -5$	$25 - 50 + 24$	-1
-3	$9 + -30 + 24$	3
-4	$16 + -40 + 24$	0
-6	$36 + -60 + 24$	0

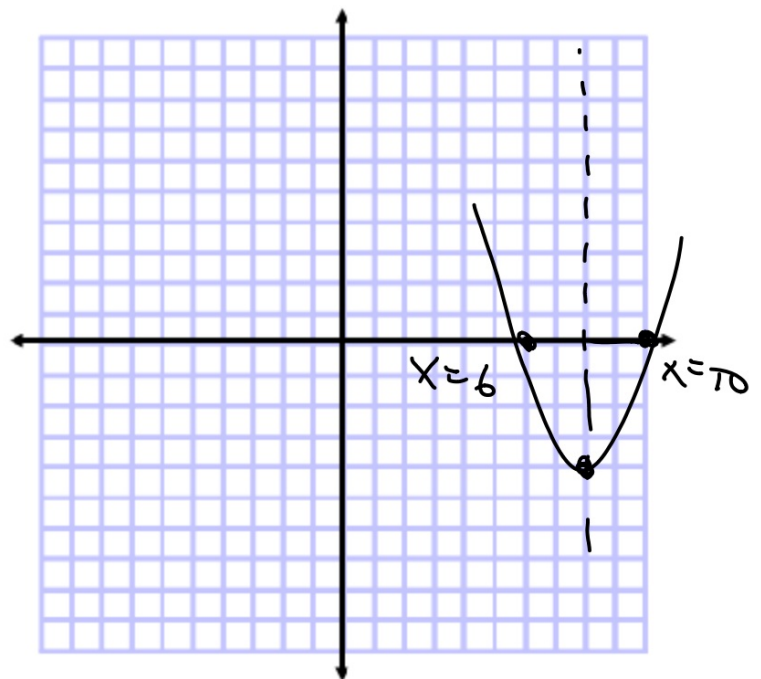


$$y = x^2 - 16x + 60$$

$$x = \frac{16}{2} = 8$$

$$x^2 - 16x = -60$$

	$x^2 - 16x + 60$	
8	$64 - 128 + 60$	-4
10	$100 - 160 + 60$	0
6	$36 - 96 + 60$	0



$$y = x^2 + 12x + 32$$

$$\begin{array}{r} 32 \\ 8 \times 4 \\ \hline 12 \end{array}$$

$$0 = (x + 8)(x + 4)$$

↓

$$x + 8 = 0$$

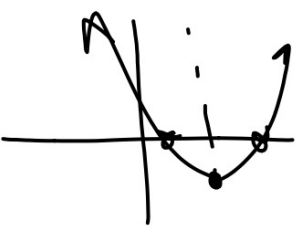
$$x = -8$$

↓

$$x + 4 = 0$$

$$x = -4$$

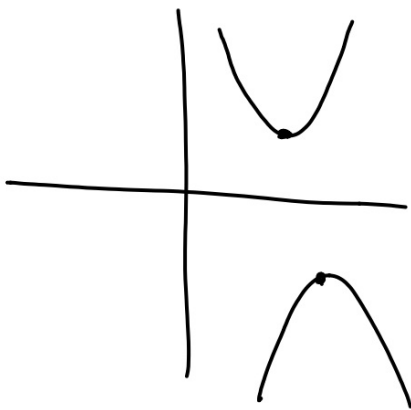
(30) $y = x^2 - 8x + 16$
 $y = (x-4)(x-4)$
 $0 = (x-4)(x-4)$
 $\downarrow \qquad \downarrow$
 $x-4=0 \quad x-4=0$
 $x=4 \quad x=4$



(31) $x^2 + 4x + 4$ $\frac{4}{2} \times \frac{2}{2}$
 $y = 0 = (x+2)(x+2)$
 $\downarrow \qquad \downarrow$
 $x+2=0 \quad x+2=0$
 $x=-2 \quad x=-2$

Matching activity:

Find the person who has the match for your card.



Solve each equation by graphing.

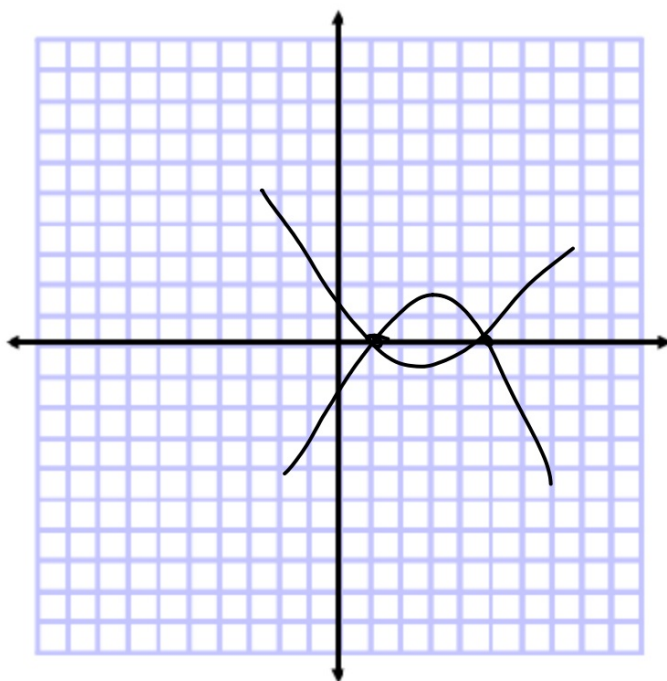
3A. $-x^2 - 3x = 5$

$x^2 + 3x + 5 = 0$

$$-x^2 - 3x - 5 = 0$$

$$x^2 + 3x + 5 = 0$$

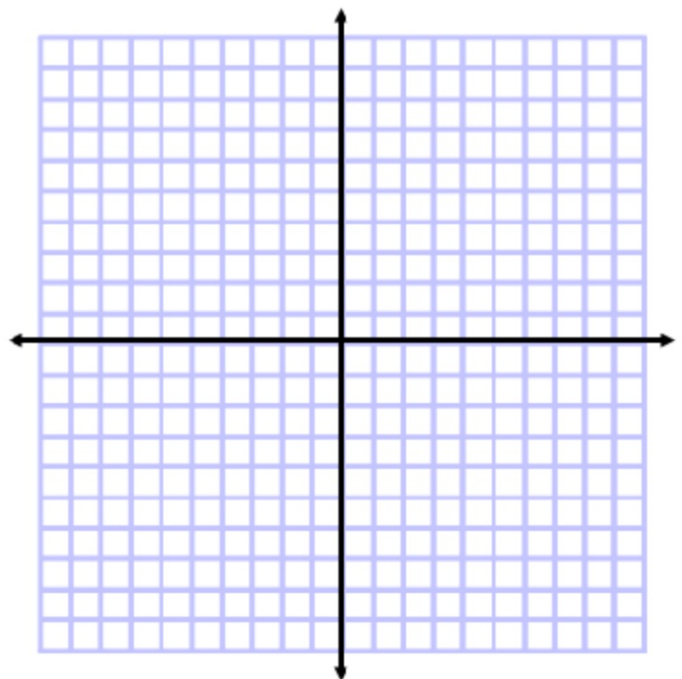
y =



Example 4 Approximate Roots with a Table

Solve $x^2 + 6x + 6 = 0$ by graphing. If integral roots cannot be found, estimate the roots to the nearest tenth.

If they are not integers...
what are they between?
(change in instructions)



Guided Practice

4. Solve $2x^2 + 6x - 3 = 0$ by graphing. If integral roots cannot be found, estimate the roots to the nearest tenth.

