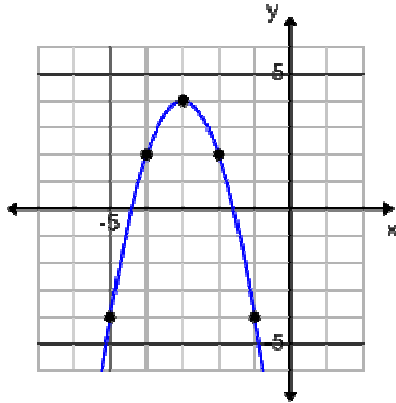
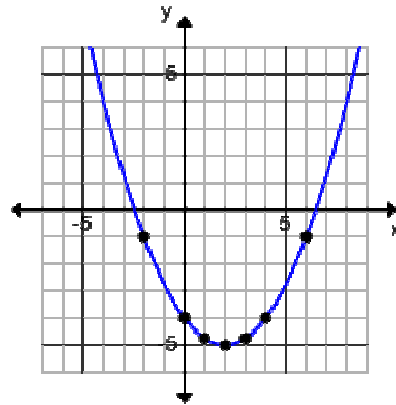


Algebra 2
Semester 1 Review Answers

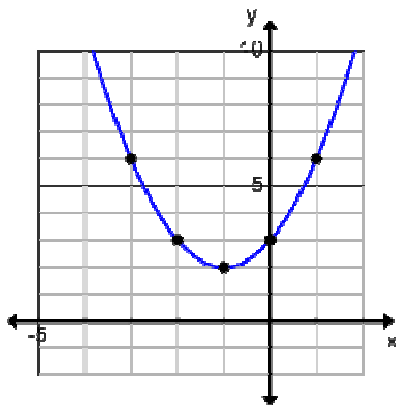
$$y = -2(x+3)^2 + 4$$



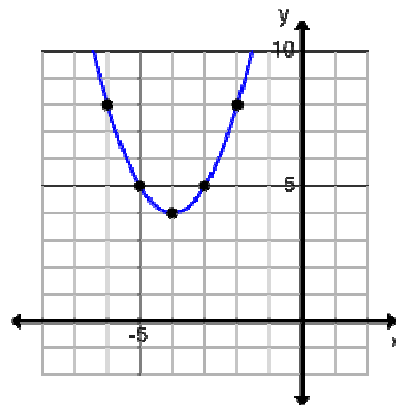
$$y = \frac{1}{4}(x-2)^2 - 5$$



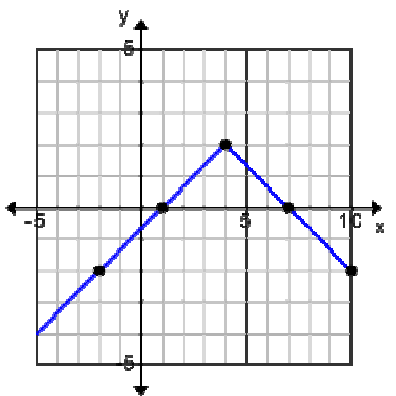
$$y = x^2 + 2x + 3$$



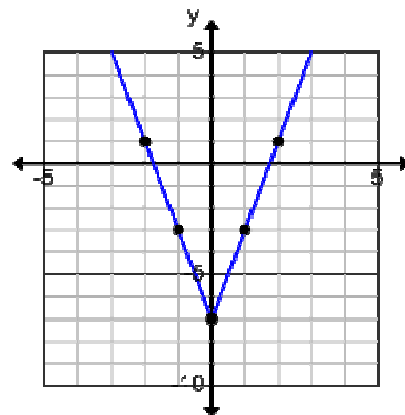
$$y = x^2 + 8x + 20$$



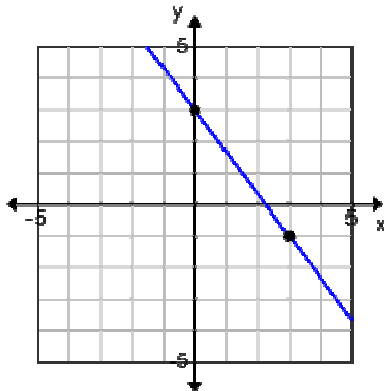
$$y = -\frac{2}{3}|x-4| + 2$$



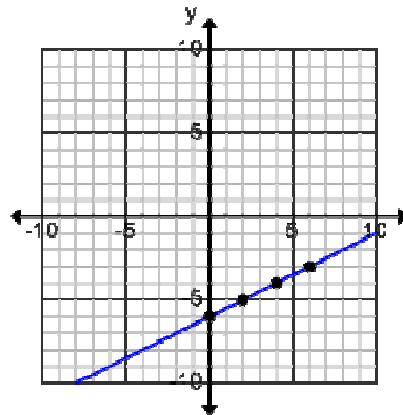
$$y = 4|x| - 7$$



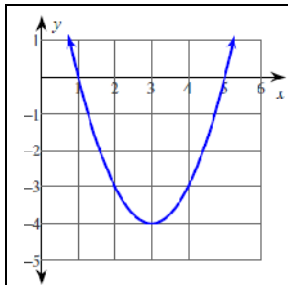
$$4x + 3y = 9$$



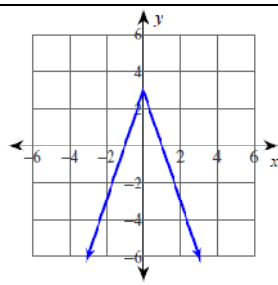
$$x - 2y = 12$$



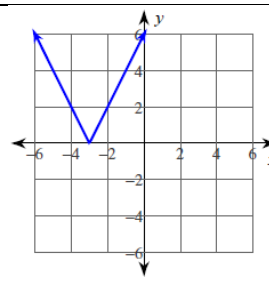
Identify the parent function, describe the transformations represented by the graph, and write the equation.



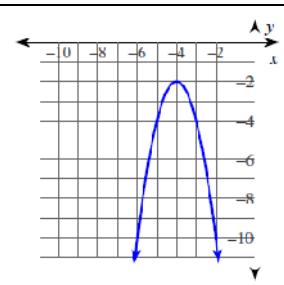
Parent: $y = x^2$
 Transformations: right 3,
 down 4
 Equation: $y = (x - 3)^2 - 4$



Parent: $y = |x|$
 Transformations: reflection
 across the x -axis, vertical
 dilation bafo 3, up 3
 Equation: $y = -3|x| + 3$



Parent: $y = |x|$
 Transformations: left 3,
 vertical dilation bafo 2
 Equation: $y = 2|x + 3|$



Parent: $y = x^2$
 Transformations: reflection
 across the x -axis, vertical
 dilation bafo 2, left 4, down 2
 Equation: $y = -2(x + 4)^2 - 2$

Write the equation of the line described.

through the points $(-5, -3)$ and $(1, -1)$
 $y + 1 = \frac{1}{3}(x - 1)$ or $y + 3 = \frac{1}{3}(x + 5)$

through the point $(2, 5)$ perpendicular to $y = 3x + 4$
 $y - 5 = -\frac{1}{3}(x - 2)$

horizontal line through $(7, 2)$
 $y = 2$

through the point $(-3, 7)$ parallel to $y = \frac{4}{5}x - 11$
 $y - 7 = \frac{4}{5}(x + 3)$

Solve.

$$7x^2 + 30x = 25$$

$$7x^2 + 30x - 25 = 0$$

$$(7x - 5)(x + 5) = 0$$

$$x = \frac{5}{7}, -5$$

$$3x^2 = 24 - x$$

$$3x^2 + x - 24 = 0$$

$$(3x - 8)(x + 3) = 0$$

$$x = \frac{8}{3}, -3$$

$$10x^2 - 3 = -159$$

$$10x^2 = -156$$

$$x^2 = -15.6$$

$$x = \sqrt{-15.6}$$

$$x = \pm i\sqrt{15.6}$$

$$7x^2 - 7 = 532$$

$$7x^2 = 539$$

$$x^2 = 77$$


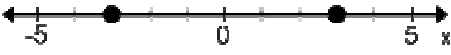
$$x = \pm\sqrt{77}$$

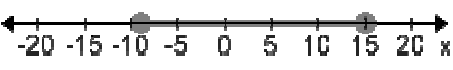

$5x^2 - 4 = -14$ $5x^2 = -10$ $x^2 = -2$ $x = \sqrt{-2}$ $x = \pm i\sqrt{2}$	$0 = 8x^2 + 8x - 10$ $0 = 2(4x^2 + 5x - 5)$ Doesn't factor. Use Quad. Form. $x = \frac{-8 \pm \sqrt{8^2 - 4(8)(-10)}}{2(8)}$ $x = \frac{-8 \pm \sqrt{64 + 320}}{16}$ $x = \frac{-8 \pm \sqrt{384}}{16}$ $x = \frac{-8 \pm 8\sqrt{6}}{16}$ $x = \frac{-1 \pm \sqrt{6}}{2}$	$11x^2 + 8x - 24 = 0$ Doesn't factor. Use Quad. Form. $x = \frac{-8 \pm \sqrt{8^2 - 4(11)(-24)}}{2(11)}$ $x = \frac{-8 \pm \sqrt{64 + 1056}}{22}$ $x = \frac{-8 \pm \sqrt{1120}}{22}$ $x = \frac{-8 \pm 4\sqrt{70}}{22}$ $x = \frac{-4 \pm 2\sqrt{70}}{11}$	$4x^2 - 29x - 24 = 0$ $(4x + 3)(x - 8) = 0$ $x = -\frac{3}{4}, 8$
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Simplify.


$(7 - 12i) - (4 + 8i)$ $3 - 20i$	$(-8i)(-6 - 2i)$ $48i + 16i^2$ $-16 + 48i$	$(-2i) + (-6 - 12i) - 11$ $-17 - 14i$	$(-11 - 6i)(2 - 2i)$ $-22 - 12i + 22i + 12i^2$ $-22 - 12i + 22i - 12$ $-36 + 10i$
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Solve and graph.


$5 + -4k \leq 13$ $ -4k \leq 8$ $-4k \leq 8$ $-4k \geq -8$ $k \geq -2$ $k \leq 2$ 	$ -10x - 9 = 21$ $ -10x = 30$ $-10x = 30$ $-10x = -30$ $x = -3$ $x = 3$ 
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$ 3x-9 -9 \leq 27$ $ 3x-9 \leq 36$ $3x-9 \leq 36 \quad 3x-9 \geq -36$ $3x \leq 45 \quad 3x \geq -27$ $x \leq 15 \quad x \geq -9$ 	$4 7x-2 +5=13$ $4 7x-2 =8$ $ 7x-2 =2$ $7x-2=2 \quad 7x-2=-2$ $7x=4 \quad 7x=0$ $x=\frac{4}{7} \quad x=0$ 
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$-5-8n < -13$ and $-3-10n > -23$
 $-8n < -8$ and $-10n > -20$
 $n > 1$ and $n < 2$



$-6(8x-5) \leq -126$
 $(8x-5) \geq 21$
 $8x \geq 26$
 $x \geq \frac{26}{8}$
 $x \geq \frac{13}{4}$



Solve each system.

$\begin{cases} 6x-10y=-14 \\ x+20y=-24 \end{cases}$ $(-4, -1)$	$\begin{cases} 8x-8y=8 \\ -5x-2y=16 \end{cases}$ $(-2, -3)$	$\begin{cases} y=-\frac{1}{2}x+1 \\ x+2y=3 \end{cases}$ <p><i>no solution</i></p>	$\begin{cases} 4x+y=7 \\ -6x+8y=-20 \end{cases}$ $(2, -1)$
$\begin{cases} -4x-4z=12 \\ 5x-2y+5z=-21 \\ 5x+3y-z=12 \end{cases}$ $(0, 3, -3)$	$\begin{cases} -5y+z=9 \\ 2x-4y-6z=-24 \\ -4x+6y-6z=-22 \end{cases}$ $(-2, -1, 4)$	$\begin{cases} 6x-3y+z=10 \\ -26x-4y+z=14 \\ -x-3y-z=24 \end{cases}$ $(.051, -5.624, -7.178)$	$\begin{cases} 4x-2y-3z=23 \\ 2x+y+z=7 \\ -x-2y-3z=-2 \end{cases}$ $(5, -6, 3)$

Find the equation of the parabola passing through the given points.

$(1, 2), (2, -1), (5, 2)$ $y = x^2 - 6x + 7$	$(3, 1), (2, 3), (0, -5)$ $y = -2x^2 + 8x - 5$	$(-2, 7), (4, 10), (1, 4)$ $y = \frac{1}{2}x^2 - \frac{1}{2}x + 4$
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