

2018 Algebra 2 Ch. 1-2 Quiz Part I - Ch. 2 Questions (each question worth 2 points)

Describe the transformation(s) of $f(x) = x^2$ represented by g .

1. $g(x) = -(2x)^2$

Reflection

a

reciprocal of "a"

- Reflection about x-axis
- Horizontal Shrink by $1/2$

Write a rule for g described by the transformations of the graph of f . Then identify the vertex.

2. $f(x) = x^2$; vertical shrink by a factor of $1/3$ and a reflection in the y-axis, followed by a translation 2 units left.

1st $a = 1/3$

$f(x) = x^2$

$f(-x)$

Followed by

1st $h(x) = \frac{1}{3}(-x)^2 \rightarrow \frac{1}{3}x^2$

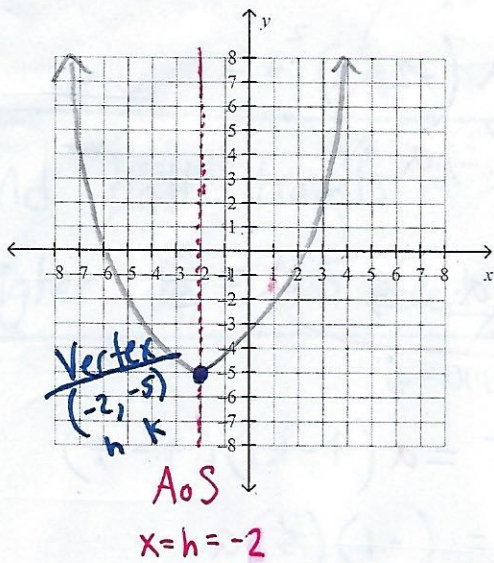
2nd $h = -2$ (2 left)

2nd $g(x) = h(x+2) \rightarrow \frac{1}{3}(x+2)^2 = g(x)$

$(-2, 0)$ Vertex

Graph the function. Label the vertex and axis of symmetry.

3. $f(x) = (x+2)^2 - 5$ Vertex Form.



$h = -2$

$k = -5$

$a = 1 \rightarrow a > 0$, so \uparrow

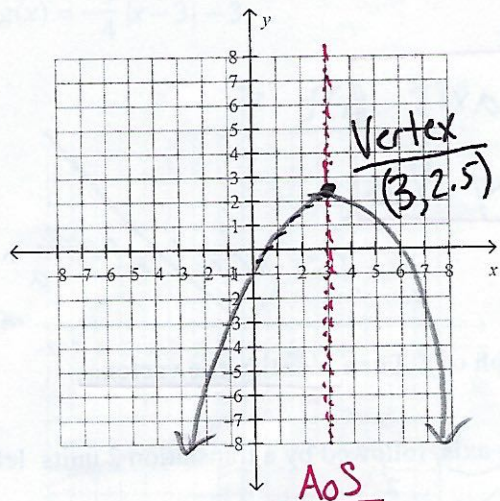
4. $y = -0.5x^2 + 3x - 2$

Standard Form.

$a = -0.5 \rightarrow a < 0$, so \downarrow

$b = 3$

$c = -2$



$AoS = x = \frac{-b}{2a} \rightarrow \frac{-(3)}{2(-.5)} = \frac{-3}{-1} = 3$

$y = -.5(3)^2 + 3(3) - 2$

$y = -.5(9) + 9 - 2 \rightarrow -4.5 - 2 + 9$

$\rightarrow 2.5$

Identify the x-intercept(s) and vertex of the graph of the function.

5. $f(x) = (x-1)(x+5)$

$AoS = x = \frac{p+q}{2}$

$x = \frac{-5+1}{2} = \frac{-4}{2} = -2 = h$

$a = 1$
 $p = 1$
 $q = -5$
Vertex
 $(-2, -9)$

$y = (-2-1)(-2+5) \rightarrow (-3)(3) = -9$

Write an equation of the parabola in vertex form: $y = a(x-h)^2 + k$

6. passes through $(-2, 10)$ and has vertex $(-4, 7)$ $\rightarrow 10 = a(-2+4)^2 + 7$

$y = \frac{3}{4}(x+4)^2 + 7$

$10 = (2)^2 a + 7$

$\frac{3}{4} = \frac{4a}{4} \rightarrow a = \frac{3}{4}$

Write an equation of the parabola in intercept form: $y = a(x-p)(x-q)$

7. x-intercepts of 10 and 4; passes through $(9, 35)$

$\rightarrow 35 = a(9-10)(9-4)$

$35 = (-1)(5)a$

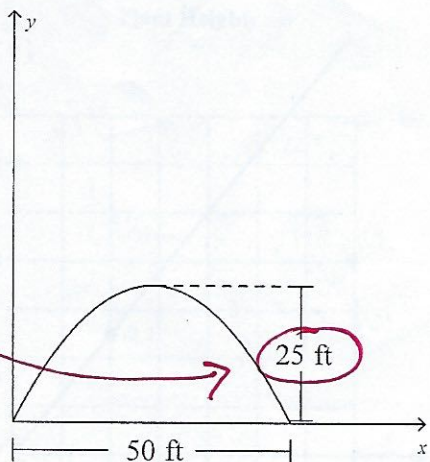
$35 = -5a$

$-7 = a$

$y = -7(x-10)(x-4)$

8. The parabola shows the path of your first soccer kick, where x is the horizontal distance (in feet) and y is the corresponding height (in feet). The path of your second soccer kick from the same position can be modeled by the function $f(x) = -0.09x(x - 70)$. Which ball travels higher? By how much (round your answer to the nearest foot)? Justify your answer.

1st
Kick



2nd
Kick

$$y = -0.09x(x - 70)$$

intercept form

$$y = -0.09(x - 0)(x - 70)$$

$$p = 0$$

$$q = 70$$

$$AoS = x = \frac{p+q}{2} = \frac{0+70}{2} = 35$$

$$y = -0.09(35 - 0)(35 - 70)$$

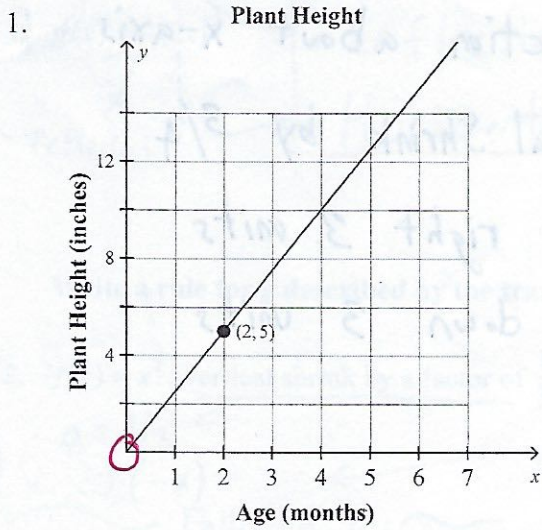
$$y = (-0.09)(35)(-35)$$

$$y = 110.25$$

2nd ball travels
higher by 85 feet

Algebra 2 Ch. 1-2 Quiz Part II - Ch. 1 Review Questions (each question worth 3 points)

Write an equation of the line and interpret the slope.



$$m = \frac{5-0}{2-0} = \frac{5}{2}$$

$$b = 0 \text{ (y-intercept)}$$

$$y = \frac{5}{2}x$$

Plant grows 2.5 inches per month

Write a function g whose graph represents the indicated transformation of the graph of f .

2. $f(x) = 10|x-3| - 25$; vertical shrink by a factor of $\frac{1}{5}$ $\rightarrow a = 1/5$

$$h(x) = a f(x) \rightarrow h(x) = \frac{1}{5} (10|x-3| - 25) = 2|x-3| - 5$$

3. $f(x) = 3x - 5$; translation 9 units up $\rightarrow k = 9$

$$h(x) = f(x) + k \rightarrow h(x) = 3x - 5 + 9 = 3x + 4$$

4. $f(x) = |x|$; a translation 7 units to the left followed by a reflection in the x -axis

$$h(x) = f(x-h) \rightarrow h(x) = |x+7|$$

$$g(x) = -h(x) \rightarrow g(x) = -|x+7|$$

5. $f(x) = |2x-1| + 13$; reflection in the x -axis $\rightarrow -f(x)$

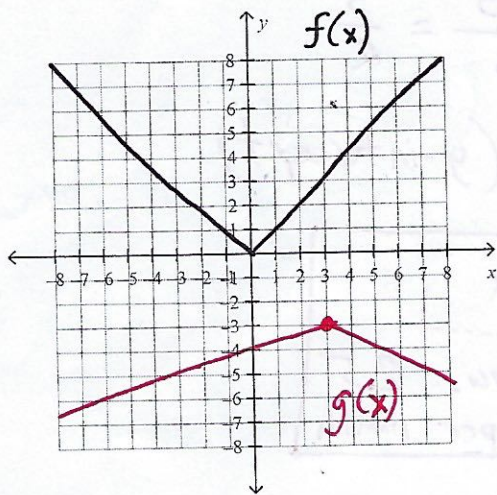
$$h(x) = -f(x) \rightarrow h(x) = -(|2x-1| + 13) = -|2x-1| - 13$$

6. $f(x) = 5x + 7$; translation 3 units right $\rightarrow h = 3$

$$h(x) = f(x-3) \rightarrow h(x) = 5(x-3) + 7 = 5x - 15 + 7 = 5x - 8$$

Graph the function and its parent function. Then describe the transformations.

7. $g(x) = -\frac{3}{4}|x-3| - 3$



- Reflection about x-axis
- Vertical Shrink by $\frac{3}{4}$
- Shift right 3 units
- Shift down 3 units

Solve the system.

8. $-x - 5y - 5z = 2$ Eq 1

$4x - 5y + 4z = 19$ Eq 2

$x + 5y - z = -20$ Eq 3

Eq 1 $-x - 5y - 5z = 2$

Eq 3 $x + 5y - z = -20$

$-6z = -18$

$z = 3$

Eq 2 $4x - 5y + 4z = 19$

Eq 3 $x + 5y - z = -20$

$5x + 3z = -10$

$5x + 3(3) = -10$

$5x + 9 = -10$

$5x = -19$

$x = -3.8$

$z = 3$

Eq 1 $\rightarrow -(-2) - 5y - 5(3) = 2$

$2 - 5y - 15 = 2$

$-5y = 15$

$y = -3$

$(-2, -3, 3)$