Name: Version B Period: _____ Date: _____

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. $g(x) = -(3x)^2$

reflection $a=3$

- Reflection about x-axis
- Horizontal Shrink by $1/3$

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

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

$a = 2$ $f(-x)$ $h = -3$

$h(x) = a \cdot f(-x)$

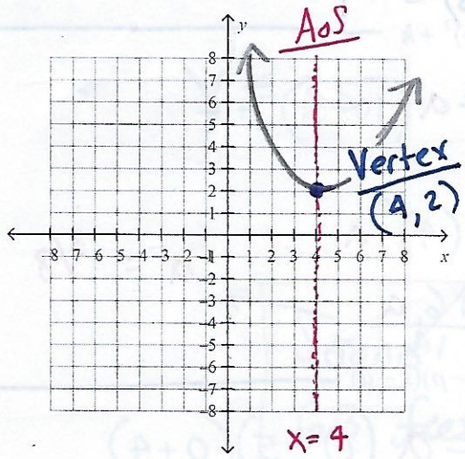
$h(x) = 2(-x)^2 \longrightarrow h(x) = 2x^2 \longrightarrow g(x) = h(x+3)$

$g(x) = 2(x+3)^2$ Vertex $(-3, 0)$

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

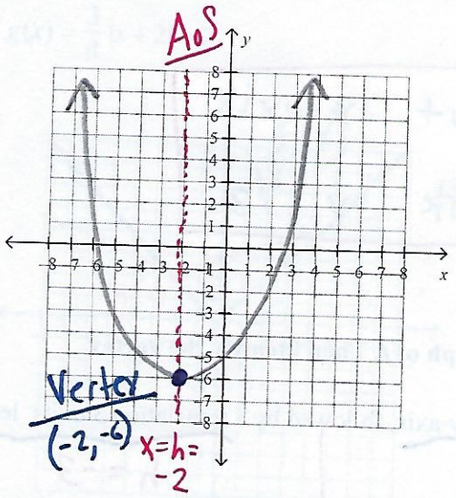
3. $f(x) = (x-4)^2 + 2$ Vertex Form.

$a = 1$, $a > 0$ so ↑



4. $y = 1.5x^2 + 6x$ Standard Form.

$a = 1.5 \rightarrow a > 0$, So opens up
$b = 6$
$c = 0$



$AoS = x = \frac{-b}{2a} = \frac{-6}{2(1.5)} = \frac{-6}{3} = -2$

$y = 1.5(-2)^2 + 6(-2)$
$y = 1.5(4) - 12$
$y = 6 - 12 = -6$

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

5. $f(x) = (x-4)(x+2)$

p q

$p = 4$, $q = -2$, $a = 1$

Vertex $(1, -9)$

$AoS = x = \frac{p+q}{2} = \frac{4-2}{2} = \frac{2}{2} = 1$

$y = (1-4)(1+2)$
$y = (-3)(3) = -9$

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

6. passes through $(10, 10)$ and has vertex $(6, 4)$ → (x y; h k)

$y = \frac{3}{8}(x-6)^2 + 4$

$10 = a(10-6)^2 + 4$
$-4 \quad\quad -4$
$6 = (4)^2 a$
$\frac{6}{16} = \frac{16a}{16}$ → $a = 3/8$

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

7. *x*-intercepts of 5 and –4; passes through $(0, 5)$

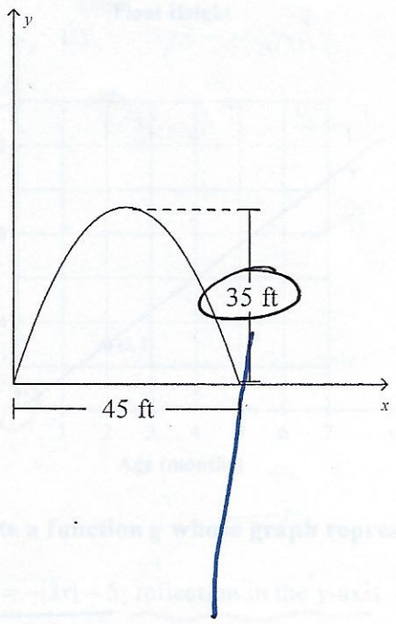
p q x y

$5 = a(0-5)(0+4)$
$5 = (-5)(4)a$
$5 = -20a$
$-1/4 = a$

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

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 $f(x) = -0.08x(x - 70)$. Which ball travels higher? By how much (round your answer to the nearest foot)? Justify your answer.

1st



$y = 35$

2nd

$y = -0.08(x)(x-70)$

Intercept Form

$y = -0.08(x-0)(x-70)$

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

$y = -0.08(35)(35-70)$

$y = (-2.8)(-35)$

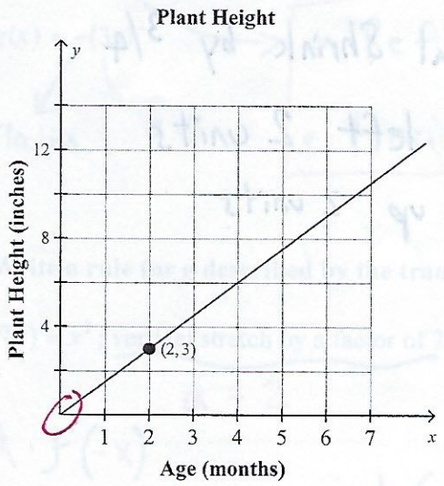
$y = 98$

Second ball travels 63 feet higher.

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.

1.



$m = \frac{3-0}{2-0} = \frac{3}{2}$

$b = 0$

$y = \frac{3}{2}x$

Plant grows by 3/2 an inch each month

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

2. $f(x) = -|3x| + 5$; reflection in the *y*-axis → $f(-x)$

$h(x) = f(-x)$

$h(x) = -|3(-x)| + 5$

$h(x) = -|-3x| + 5$

$h(x) = -|3x| + 5$

3. $f(x) = |x - 3| - 2$; vertical stretch by a factor of 3 → $a = 3$

$h(x) = a \cdot f(x)$

$h(x) = 3(|x-3| - 2)$

$h(x) = 3|x-3| - 6$

4. $f(x) = 5x + 7$; translation 3 units right → $h = 3$

$h(x) = f(x-h)$

$h(x) = 5(x-3) + 7$

$h(x) = 5x - 15 + 7$

$h(x) = 5x - 8$

5. $f(x) = |x|$; a translation 4 units to the right ($h = 4$) followed by a reflection in the *x*-axis ($-f(x)$)

$h(x) = f(x-h)$ $\quad h(x) = |x-4|$

followed by

$g(x) = -h(x)$

$g(x) = -|x-4|$

6. $f(x) = x - 9$; translation 6 units up → $k = 6$

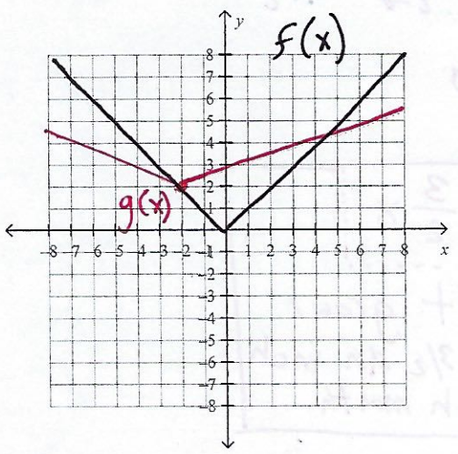
$h(x) = f(x) + k$

$h(x) = x - 9 + 6$

$h(x) = x - 3$

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

7. $g(x) = \frac{3}{4}|x+2|+2$



- Vertical Shrink by 3/4
- Shift left 2 units
- Shift up 2 units

Solve the system.

8. $4r-4s+4t=-4$
$4r+s-2t=5$
$-3r-3s-4t=-16$

Eq 1 ↗ Eq 2 ↗ Eq 3 ↗

Eq 1 $4r-4s+4t=-4$

2(Eq 2) $8r+2s-4t=10$

$12r-2s=6$

New Eq. 1: $6r-s=3$

Eq 3 $-3r-3s-4t=-16$

-2(Eq 2) $-8r-2s+4t=-10$

New Eq 3: $-11r-5s=-26$

-5(New Eq 1) $-30r+5s=-15$

(New Eq 3) $-11r-5s=-26$

$-41r=-41$

$r=1$

(New Eq 1) $6(1)-s=3$

$6-s=3$

$-s=-3$

$s=3$

(Eq 2) $4(1)+(3)-2t=5$

$4+3-2t=5$

$7-2t=5$

$-2t=-2$

$t=1$

$(1, 3, 1)$