Honors Algebra 2
Chapter 2 Quiz – no graphing calculator

Name Key

Period

1. Given $g(x) = -3(x-1)^2 - 3$, describe the transformation from the parent function.

① ② ③ ④

+1 ① Refection on x-axis

+1 ② Vertical stretch factor of 3

+1 ③ Right 1

+1 ④ Down 3

(+4)

Vert stretch factor of 3
Refl on x
Right 1, down 3

2. Write an equation for the parabola in that passes through (-7, 15) and has vertex (-5, 9).

x y h k

(+3)

$y = -6(x+5)^2 + 9$

+1 +1 +1

$y = a(x-h)^2 + k$

$15 = a(-7-(-5))^2 + 9$

$15 = 4a + 9$

$4a = 6$

$a = \frac{6}{4} = \frac{3}{2}$

3. Given $f(x) = (x-3)^2 + 6$, write an equation g(x) with a reflection over the x-axis, a horizontal stretch of 3, right 2.

① $-f(x)$ ② $f(\frac{1}{3}x)$ ③ $f(x-2)$ $a = \frac{1}{3}$

$g(x) = -(\frac{1}{3}x - \frac{11}{3})^2 - 6$

① $-f(x) = -(x-3)^2 - 6 = h(x)$

② $h(\frac{1}{3}x) = -(\frac{1}{3}x - 3)^2 - 6 = k(x)$

③ $k(x-2) = -(\frac{1}{3}(x-2) - 3)^2 - 6 = -(\frac{1}{3}x - \frac{2}{3} - \frac{9}{3})^2 - 6$

(+4)

$g(x) = -(\frac{1}{3}x - \frac{11}{3})^2 - 6$

+1 +1 +1 +1

4. Given $f(x) = 2(2x+1)^2 - 4$, write an equation g(x) with a vertical shrink of ½, and that moves right 3.

① $\frac{1}{2}[f(x)]$ ② $f(x-3)$

$g(x) = (2x-5)^2 - 2$

① $\frac{1}{2} f(x) = \frac{1}{2}[2(2x+1)^2 - 4] = (2x+1)^2 - 2 = h(x)$

② $h(x-3) = (2(x-3)+1)^2 - 2 = (2x-6+1)^2 - 2$

(+4)

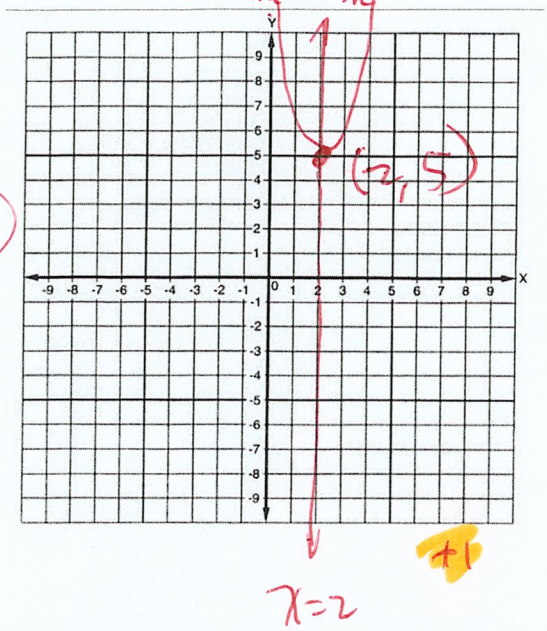
$g(x) = (2x-5)^2 - 2$

+1 +1 +1 +1

(+15)

5. For $f(x) = 2(x-2)^2 + 5$, find the vertex, axis of symmetry, where it is increasing and decreasing, and graph it.

a h k



+4

+1

x = 2

a = 2 opens up

h = 2

k = 5

v(2, 5) +1

x = 2 +1

v(2, 5)
aos x = 2
dec left of x = 2
inc right of x = 2

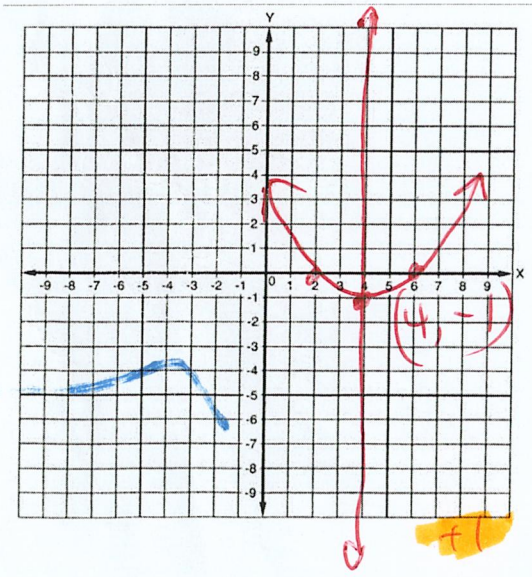
$f(0) = 2(0-2)^2 + 5 = 13$

(0, 13)

+1 (dec left of x=2
inc right of x=2

6. For $g(x) = \frac{1}{4}(x-6)(x-2)$, find the vertex, axis of symmetry, where it is increasing and decreasing, and graph it.

a p q



+4

+1

x = 4

a = $\frac{1}{4}$ opens up

p = 6 (6, 0)

q = 2 (2, 0)

+1 $x = \frac{6+2}{2} = \frac{8}{2} = 4$

x = 4

$f(4) = \frac{1}{4}(4-6)(4-2) = -1$

+1 v(4, -1)

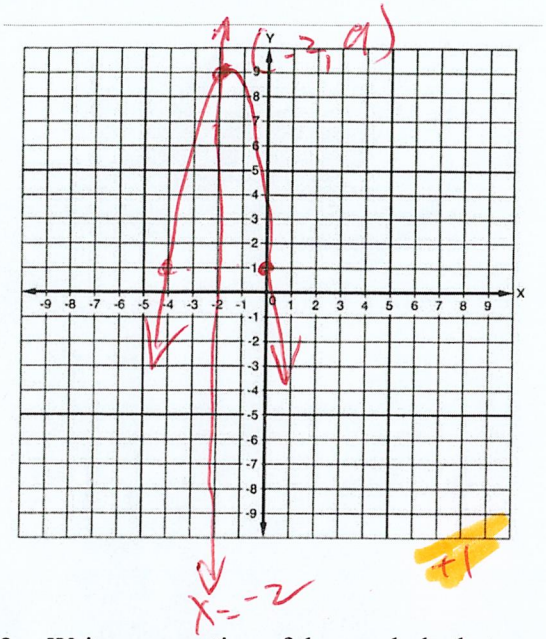
+1 (dec left of x=4
inc right of x=4

v(4, -1)
aos x = 4
dec left of x = 4
inc right of x = 4

-8

7. For $h(x) = -2x^2 - 8x + 1$, find the vertex, axis of symmetry, where it is increasing and decreasing, and graph it.

a b c



+4

v(-2, 9)
aos x = -2
inc left of x = -2
dec right of x = -2

$a = -2$
$b = -8$
$c = 1$ (0, 1)

$x = \frac{-b}{2a} = \frac{-(-8)}{2(-2)} = \frac{8}{-4} = -2$

+1 $x = -2$

$f(-2) = -2(-2)^2 - 8(-2) + 1$
$= -8 + 16 + 1 = 9$

+1 ✓ (-2, 9) +1 inc left of x = -2 dec right of x = -2

8. Write an equation of the parabola that passes through the points in the table:

+3

x	y	
-8	-67	③ 57) -36
-5	-10	② 21) -36
-2	11	-15
1	-4	① -51) -36
4	-55	

① $-4 = a(1)^2 + b(1) + c = a + b + c = -4$

② $11 = a(-2)^2 + b(-2) + c = 4a - 2b + c = 11$

③ $-10 = a(-5)^2 + b(-5) + c = 25a - 5b + c = -10$

$y = -2x^2 - 7x + 5$

② − ① $4a - 2b + c = 11$
$-a - b + c = 4$
$3a - 3b = 15$
$a - b = 5$

③ − ① $25a - 5b + c = -10$
$-a - b + c = 4$
$24a - 6b = -6$
$4a - b = -1$

$4a - b = -1$
$-a + b = -5$
$3a = -6$
$a = -2$
$b = -7$
$c = 5$

$-2 - b = 5$
$b = -7$

$-2 - 7 + c = -4$
$-9 + c = -4$
$c = 5$

+7

$y = -2x^2 - 7x + 5$
+1 +1 +1

9. Write the equation for the following quadratic: x-intercepts are -3 and 5, goes through the point (-1, 3)

p q x y

$y = -.25(x + 3)(x - 5)$

+3

$y = a(x-p)(x-q)$

$3 = a(-1+3)(-1-5)$

$3 = -12a$

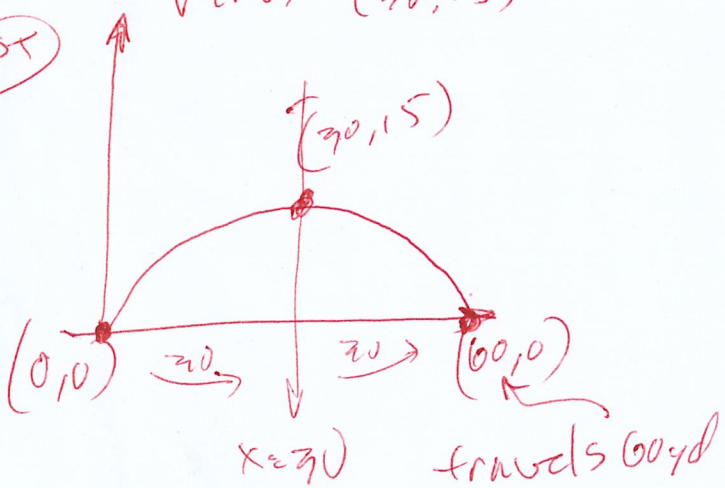
$a = -\frac{1}{4}$

10. A football player kicks a football downfield. The height of the football increases until it reaches a maximum height of 15 yards, 30 yards away from the player. A second kick is modeled by $f(x) = -0.032x(x - 50)$ where f is the height (in yards) and x is the horizontal distance (in yards). Compare the distances the footballs travel before hitting the ground. In your answer, include how much further does the longest kick travels.

First kick travels 10 yds further.

+2

(1st) vertex (30, 15)



(2nd) $f(x) = -0.032x(x-50)$

$= -0.032(x-0)(x-50)$

travels 50 yds

1st farther by 10 yds.

+1 +1

7 5