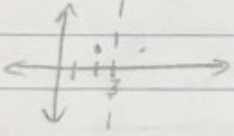


Chapter 2 Review

Problems from
Big Idea
Ch. 2 Review
and
Section Exercises

①

- horizontal shift left 4
- reflection in x axis
horizontal shift left 2
vertical shift down 1
- $AOS = 0$ $X = 0$
2(0.75)
Vertex: (0, -5)
- Use intercept form when given both x-intercepts and another point; use vertex form when given the vertex and another point.
- You cannot use the AOS to distinguish b/w the two functions b/c Each function has the same axis of symmetry $x = 2$.
-  Another point is (4, 1); use the symmetry of the graph.
- AOS: $x = 1$, Vertex: (1, -4)
- horizontal shift right 7
vertical shift up 2

②

- $g(x) = -4x^2 + 2$
- $f(x) = (x-3)(x+7)$ $\frac{3+(-7)}{2} = -2$ Vertex: (-2, -25)
 $f(-2) = (-2-3)(-2+7) = (-5)(5)$ AOS: $x = -2$

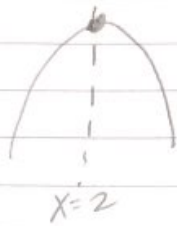
3. $a - b + 1 = 4$ $c = 1$
 $a + b + 1 = 4$ $3 - b + 1 = 4$ $f(x) = 3x^2 + 1$

 $2a + 2 = 8$ $b = 0$
 $2a = 6$
 $a = 3$

4. $4 = a(3-1)(3+2)$ SHOULD BE $4 = a(3+1)(3-2)$
 $f(x) = (x+1)(x-2)$ b/c $p = -1$ $4 = 4a$
 $q = 2$ $a = 1$

p & q plugged in wrong

5.



highest

6. reflection in x-axis, horizontal compression by $1/3$, vertical shift up 2

③ 1. $g(x) = (2x+6)^2 + 2$

∴ 2. $f(x) = a(x-h)^2 + k$
 $12 = a(1-10)^2 - 4$
 $12 = 81a - 4$
 $81a = 16$
 $a = \frac{16}{81}$

$$f(x) = \frac{16}{81}(x-10)^2 - 4$$

3. $f(x) = a(x-p)(x-q)$
 $3 = a(4+1)(4-5)$
 $3 = -5a$
 $a = -3/5$

$$f(x) = -\frac{3}{5}(x+1)(x-5)$$

4. $C = 280$
 $a + b + 280 = 264$
 $9a + 3b + 280 = 136$

$$\rightarrow \begin{aligned} -3a - 3b &= 48 \\ 9a + 3b &= -144 \end{aligned}$$

$$6a = -96$$

$$a = -16$$

$$-16 + b = -16$$

$$b = 0$$

$$f(x) = -16x^2 + 280$$

Station 4

1. $f(x) = -2x^2 + 16x + 3$
$$\frac{-b}{2a} = \frac{-16}{2(-2)} = \frac{-16}{-4} = 4$$

$$f(4) = -2(4)^2 + 16(4) + 3 = 35$$

Vertex: (4, 35)
AOS $x = 4$
Maximum: 35
Increasing to the left of $x = 4$
Decreasing to the right of $x = 4$

2. $(-2, 7)$ $a(-2)^2 + b(-2) + c = 7$ $4a + 2b + c = 7$
 $(1, 10)$ $a(1)^2 + b(1) + c = 10$ $-(a + b + c = 10)$
 $(2, 27)$ $a(2)^2 + b(2) + c = 27$ $4a + 2b + c = 27$

$$\begin{array}{r} 4a + 2b + c = 7 \\ + -a - b - c = -10 \\ \hline 3a - 3b = -3 \end{array}$$

$$\begin{array}{r} 4a + 2b + c = 27 \\ -a - b - c = -10 \\ \hline 3a + b = 17 \end{array}$$

$$\begin{array}{r} \downarrow (3a - 3b = -3) \rightarrow -3a + 3b = 3 \\ 3a + b = 17 \\ \hline 4b = 20 \\ \hline b = 5 \end{array}$$

$$\begin{array}{r} 3a + 5 = 17 \\ 3a = 12 \\ \hline a = 4 \end{array}$$

$$\begin{array}{r} a + b + c = 10 \\ 4 + 5 + c = 10 \\ \hline c = 1 \end{array}$$

$$f(x) = 4x^2 + 5x + 1$$

3. First ball : y-int (0, 5)
Vertex (3, 56.5)

Second ball : y-int (0, 6.5) "1.5 feet higher"
Vertex (3, 51.5) "max height 5 feet lower"

$$y = a(x-h)^2 + k$$
$$6.5 = a(0-3)^2 + 51.5$$

$$6.5 = 9a + 51.5$$

$$9a = -45$$

$$a = -5$$

$$f(x) = -5(x-3)^2 + 51.5$$

4. (2, 2600) $-1(4a + 2b + c = 2600)$
(5, 6500) $25a + 5b + c = 6500$
(8, 8600) $64a + 8b + c = 8600$

$$\begin{array}{r} -4a - 2b - c = -2600 \\ + 25a + 5b + c = 6500 \\ \hline 21a + 3b = 3900 \end{array}$$

$$\begin{array}{r} -4a - 2b - c = -2600 \\ + 64a + 8b + c = 8600 \\ \hline 60a + 6b = 6000 \end{array}$$

$$\begin{array}{r} -2(21a + 3b = 3900) \\ 60a + 6b = 6000 \end{array}$$

$$\begin{array}{r} -42a - 6b = -7800 \\ 60a + 6b = 6000 \\ \hline 18a = -1800 \end{array}$$

$$a = -100$$

$$60(-100) + 6b = 6000$$

$$-6000 + 6b = 6000$$

$$6b = 12000$$

$$b = 2000$$

$$f(x) = -100x^2 + 2000x - 1000$$

$$4(-100) + 2(2000) + c = 2600$$

$$-400 + 4000 + c = 2600$$

$$c = -1000$$