

Chapter 4 More Review Questions

Name _____

KEY

Write the equation of the quadratic given the following:

- a) Vertex $(-2, -3)$ passing through the point $(-4, 9)$
- $\begin{matrix} P & q \\ x & y \end{matrix}$

$$y = a(x - p)^2 + q$$

$$9 = a(-4 - (-2))^2 + (-3)$$

$$9 = a(-2)^2 - 3$$

$\begin{matrix} +3 & & +3 \end{matrix}$

$$\frac{12}{4} = \frac{4a}{4}$$

$$3 = a$$

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

- b) Passing through $A(-4, 6)$ with x -intercepts -5 and -1 .
- $\begin{matrix} x & y & & x_1 & & x_2 \end{matrix}$

$$y = a(x - x_1)(x - x_2)$$

$$6 = a(-4 - (-5))(-4 - (-1))$$

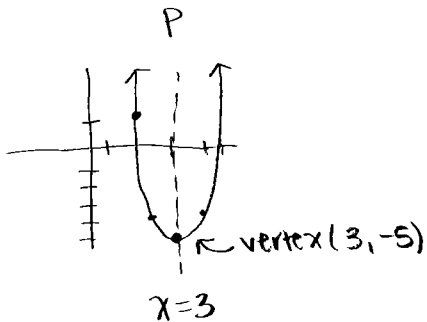
$$6 = a(1)(-3)$$

$$\frac{6}{-3} = \frac{-3a}{-3}$$

$$-2 = a$$

$$y = -2(x + 5)(x + 1)$$

c) State the equation of a quadratic in vertex form if the axis of symmetry is $x = 3$ and the range is $y \geq -5$ and passing through the point $(2, 1)$.



p q x y

$$y = a(x - p)^2 + q$$

$$1 = a(2 - 3)^2 - 5$$

$$+5 \qquad +5$$

$$6 = a(-1)^2$$

$$6 = a$$

$$y = 6(x - 3)^2 - 5$$

d) x-intercepts of -1 and 3 and range $y \leq 2$

x_1 x_2 q

Axis of Symmetry:

$$\frac{-1 + 3}{2} = \frac{2}{2} = 1$$

\uparrow p

\therefore vertex $= (1, 2)$

method ①: vertex $(1, 2)$ through point $(3, 0)$

$$0 = a(3 - 1)^2 + 2$$

$$-2 = a(2)^2$$

$$\frac{-2}{4} = \frac{4a}{4}$$

$$-\frac{1}{2} = a$$

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

method ②: x-ints -1 and 3 through point $(1, 2)$

$$2 = a(1 - (-1))(1 - 3)$$

$$2 = a(2)(-2)$$

$$\frac{2}{-4} = \frac{-4a}{-4}$$

$$-\frac{1}{2} = a$$

$$y = -\frac{1}{2}(x + 1)(x - 3)$$