2.1 and 2.2 Review

Sunday, October 13, 2019 6:26 PM

Warm-up (2.1/2.2 Quiz next Monday)

Find the equation of the parabola given:

a) vertex $(\overset{h}{-3}, \overset{k}{-2})$

passes through $(\frac{1}{2}, 2)$

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

$f(x) = a(x+3)^2 - 2$

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

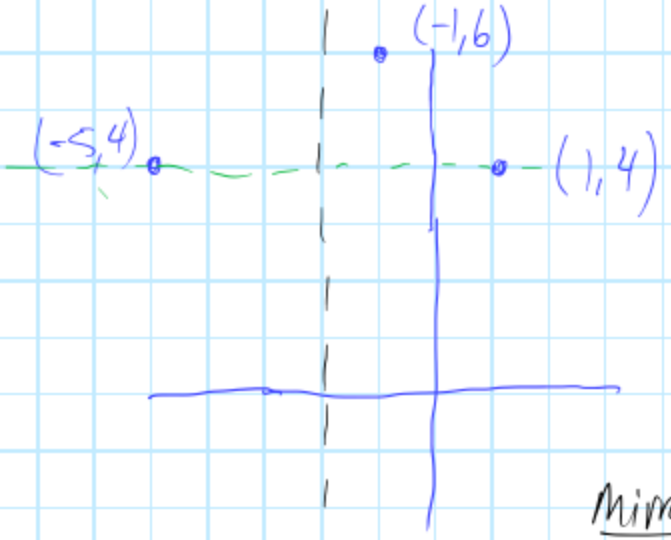
$4 = a(\frac{7}{2})^2$

$\frac{4}{49} \times 4 = \frac{49}{4} a \times \frac{4}{49}$

$a = \frac{16}{49}$

$f(x) = \frac{16}{49}(x+3)^2 - 2$

b) passes through $(-5,4), (-1,6), (1,4)$



Middle of $(-5,4)$ and $(1,4)$: $\frac{(-5)+1}{2} = \frac{-4}{2}$

$= -2 = h$

$f(x) = a(x+2)^2 + k$

Mirror point: $(1,4)$

$f(1) = 4 = a(1+2)^2 + k$

$4 = 9a + k$

(2) $4 - 9a = k$

Other point: $(-1,6)$

Other Point: $(-1, 6)$

$$f(-1) = 6 = a(-1+2)^2 + k$$

$$6 = a + k$$

(ii) $6 - a = k$

(i) = (ii) $\Rightarrow$ $4 - 9a = 6 - a$

$$-2 = 8a$$

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

(ii) $\Rightarrow$ $6 - \left(-\frac{1}{4}\right) = k$

$$\frac{24}{4} + \frac{1}{4} = k$$

$$\frac{25}{4} = k$$

$$f(x) = -\frac{1}{4}(x+2)^2 + \frac{25}{4}$$