

MATH 4E Fall 2012  
Quiz 2 Solutions

1.

$$|1 - 4x| - 7 < 2$$

$$|1 - 4x| < 9$$

$$-9 < 1 - 4x < 9$$

$$-10 < -4x < 8$$

$$\frac{5}{2} > x > -2$$

Or equivalently,  $-2 < x < \frac{5}{2}$ . In interval notation,  $(-2, \frac{5}{2})$ .

2. (a)

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(6 - (-3))^2 + (2 - 0)^2}$$

$$d = \sqrt{9^2 + 2^2}$$

$$d = \sqrt{85}$$

(b)

$$M = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$M = \left( \frac{-3 + 6}{2}, \frac{2 + 0}{2} \right)$$

$$M = \left( \frac{3}{2}, 1 \right)$$

3. (a)

$$x - \text{intercepts} : 0 = \frac{3x}{x^2 + 9}$$

$$0 = x$$

Therefore,  $x = 0, y = 0$  is an intercept.

$$y - \text{intercepts} : y = \frac{3(0)}{(0)^2 + 9}$$

$$y = 0$$

Therefore,  $x = 0, y = 0$  is an intercept. That is, our only intercept is  $(0,0)$ .