Math 151 F08N03/F08N04 - Quiz 4 Name: SOLUTIONS.
Oct 10 2008 Stu#:

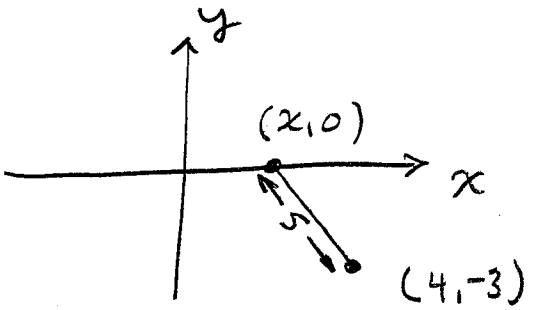
(1) [3 points] Find the midpoint of the line segment joining $P_1 = (-3, 2)$ and $P_2 = (6, 0)$.

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

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

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

(2) [7 points] Find all points on the x-axis that are 5 units from the point $(4, -3)$.



$$\therefore \quad 5 = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

$$5 = \sqrt{(x-4)^2 + (0-(-3))^2}$$

$$25 = (x-4)^2 + 9$$

$$(x-4)^2 = 16$$

$$\therefore \quad x - 4 = 4, -4$$

$$x = 4+4, -4+4$$

$$x = 8, 0$$

$\therefore$ Points are $(8,0)$, $(0,0)$.

(3) [**5 points**] Find the x and y intercepts of the graph of $x^2 + y - 9 = 0$

x-intercepts: $x^2 + 0 - 9 = 0$

$x^2 = 9$

$x = 3, -3$

y-intercepts: $0^2 + y - 9 = 0$

$y = 9$

(4) [**5 bonus points**] Simplify

$$\frac{\frac{4x+20}{9x^2}}{\frac{x^2-25}{3x}}$$

$$= \frac{4x+20}{9x^2} \cdot \frac{3x}{x^2-25}$$

$$= \frac{4(x+5) \cdot 3x}{3 \cdot 3 x^2 (x-5)(x+5)}$$

$$= \frac{4}{3x(x-5)}$$