

## MAT 104 Quiz 2

Friday, February 11, 2005

1. (a) Solve the inequality below and write your answer in set builder notation.

$$3 - x \geq 7 - 3x$$

$$\begin{aligned} 3 - x \geq 7 - 3x &\implies 3 + 2x \geq 7 \\ &\implies 2x \geq 4 \\ &\implies x \geq 2 \end{aligned}$$

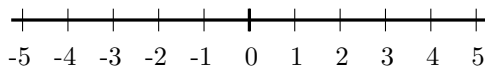
So the solution set is

$$\{x \mid x \geq 2\}$$

- (b) Write your answer in interval notation.

$$[2, \infty)$$

- (c) Indicate your solution on the number line below.



2. Solve the following inequality:

$$|2x + 3| \geq 3$$

First split this as two inequalities. Remember, this is saying that we want the expression  $(2x + 3)$  to live at least 3 units away from 0. To be that far from zero, the expression can be to the right of 3 (greater than or equal to 3), or to the left of -3 (less than or equal to -3). So we have

$$2x + 3 \geq 3 \text{ or } 2x + 3 \leq -3$$

Solving each of these inequalities individually, we get

$$x \geq 0 \text{ or } x \leq -3$$

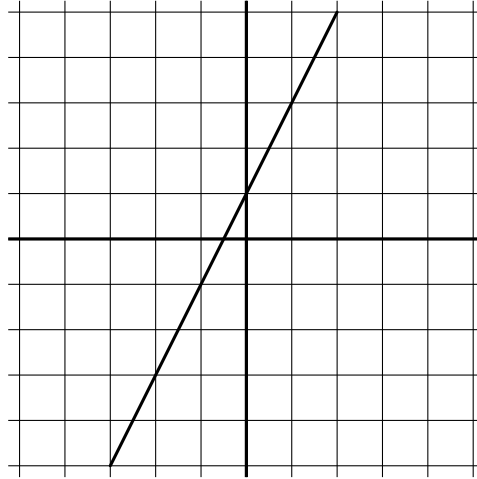
3. For the function  $f$  given by  $f(x) = x^2 + x - 3$ , find

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

(b)  $f(-1) = (-1)^2 + (-1) - 3 = 1 - 1 - 3 = -3$

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

4. Graph the equation  $y = 2x + 1$  on the coordinate plane below.



5. Graph the equation  $2x + 3y = 6$  on the coordinate plane below.

