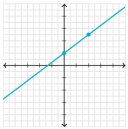P.3 LINEAR Equations and Inequalites

Objectives: 1) I can determine if an equation is linear.

2) I can solve multi-step linear equations.

3) I can solve linear inequalites.

Aug 27-10:43 PM

What makes a linear equation?

A *linear equation* in 1 variable- is an equation that has one unknown and the unknown is written to the first power.

$$ax + b = 0$$

Examples

$$4x - 3 = 12 \qquad \frac{2}{3}y + \frac{1}{5} = \frac{2}{15}$$

$$\frac{2}{x} = 20 \qquad x^2 - 3 = 27$$

Aug 27-10:48 PM

Solving Linear Equations

Ex 1 which of the following numbers are a solution.

$$3(x - 1) = -2x + 12$$

a) x=5   b) x=3

Aug 27-10:54 PM

More examples (use *inverse operations*!)

Ex. 1

$$3y - 2 + 5y = 2y + 5 + 4y + 3$$

Ex. 2

$$4(x + 3) = x - 3(x - 2)$$

Aug 27-10:55 PM

Ex. 3

$$\frac{x+3}{6}=2x$$

Ex. 4

$$\frac{3y}{2}+\frac{y}{6}=\frac{10}{3}$$

Solve the inequalities and graph the solution.

$$5x-1\le 14 \qquad\qquad 5x-1\ge 3x+8$$

$$x-4\ge 5x+12 \qquad\qquad 3< -3x-9$$

Aug 3-1:49 PM   Aug 27-11:02 PM

Representing Inequalities Using a Real Number Line and Interval Notation

Table 7		
Interval	Inequality Notation	Graph
The open interval (a, b)	$\{x \mid a < x < b\}$	
The closed interval $[a, b]$	$\{x \mid a \le x \le b\}$	
The half-open interval $[a, b)$	$\{x \mid a \le x < b\}$	
The half-open interval $(a, b]$	$\{x \mid a < x \le b\}$	
The interval $[a, \infty)$	$\{x \mid x \ge a\}$	
The interval (a, ∞)	$\{x \mid x > a\}$	
The interval $(-\infty, a]$	$\{x \mid x \le a\}$	
The interval $(-\infty, a)$	$\{x \mid x < a\}$	
The interval $(-\infty, \infty)$	$\{x \mid x \text{ is a real number}\}$	

Solve the *compound inequalities* and graph.

$$-2 < 3x+1 < 10 \qquad\qquad -3 < -4x+1 < 13$$

Aug 27-11:04 PM   Aug 27-11:18 PM