Session 1.3

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June 30, 2017

Warm-up problems

1. Solve each of the following for the variable value
   (a) $\frac{m}{9} - 1 = -2$
   (b) $-15 = -4x + 5$
   (c) $8n + 7 = 31$
   (d) $8 + \frac{b}{-4} = 5$
   (e) $3n - 5 = -8(6 + 5n)$
2. Find the slope and a two points (x, y) for each equation
   (a) $2y - 6x = -4$
   (b) $y = -x + 3$
   (c) $y = -\frac{5}{2}x - 5$
   (d) $y = \frac{1}{5}x - 4$
   (e) $8x + 3y = -9$
   (f) $y = \frac{1}{4}x + 2$
3. Draw a number line for each inequality to show which values of x satisfy it
   (a) $\left|\frac{x}{6}\right| \geq 5$
   (b) $\left|\frac{x}{4}\right| \leq 3$
   (c) $|-8x| < 32$
   (d) $|x| + 5 < 9$
   (e) $|x + 5| < 9$
   (f) $|10 + 4x| < 14$

Group problems

1. Find the slope and a few points, and then sketch the graph of each
   (a) $y = -\frac{1}{3}x + 3$
   (b) $y = 2x + 5$

(c) $6x + 5y = 20$

(d) $10x - 3y = 15$

(e) $10x - 3y = 15$

2. Find the equation of a line given a few points

   (a) $(-4, 7), (-6, -4)$

   (b) $(3, 0), (11, 15)$

   (c) $(3, 20), (5, 8)$

   (d) $(12, 2), (7, 5)$

   (e) $(6, 12), (15, 3)$

3. Graph the following and indicate the peak/trough (corner)

   (a) $y = |x| + 2$

   (b) $y = |x + 3|$

   (c) $y = |x - 2| - 4$

   (d) $y = |x + 3| + 1$

   (e) $y = -|x + 1| + 2$

   (f) $y = -|x - 5| + 3$

4. In general, what happens if we add 3 to an equation? subtract 3? add c (a constant)?

5. In general, what happens if we add 3 to x in an equation? subtract 3? add c (a constant)?