Precalc Warm Up # 2-1

Graph (w/out grapher)

1. \( f(x) = 4 - \frac{2}{5}x \)

2. \( 8x - 4y = 24 \)

3. \( x = 4 \)

4. \( 2y = 12 \)

Label any x- and y-intercepts, and give slope
4. (c) \[ ax = b(a - x) \]
   \[ ax = b - ab + bx \]
   \[ \frac{1}{a} + \frac{1}{x} = \frac{1}{b} \]
   \[ abx \]

   (f) \[ a \left( \frac{1}{a} + \frac{1}{x} \right) = b \left( \frac{1}{b} \right) \]
   \[ \frac{a}{a} + \frac{a}{x} = \frac{b}{b} \]
   \[ \frac{a}{x} = \frac{b}{b} \]

   (i) \[ \frac{a}{b-x} = \frac{b}{a-x} \]
   \[ a^2 - ax = b^2 - bx \]
   \[ ax - bx = a^2 - b^2 \]
   \[ x \left( b - a \right) = (a + b)(b - a) \]
   \[ x = b + a \]
5.

(c) \[ |2 - \frac{1}{3}x| = 4 \]

(f) \[ |2x + \frac{1}{4}| = 1 \]

(i) \[ \left| \frac{2}{3}x + 1 \right| = 1 \]

(l) \[ |2ax - b| = 3b \]
1. Solve the following inequalities.

(c) \[ x + 1 > \frac{x + 3}{2} \]

(f) \[ 1 - 3x < 5x - 2 \]

2. (c) \[ \frac{x}{5} + \frac{2 - 3x}{3} \geq -2 \]
3. Solve the following inequalities.

(c) \[ \frac{x \cdot b}{a} + \frac{x}{a^2} < \frac{4x \cdot b}{a} - \frac{x}{a^2}, \quad b > a > 0 \]

\[ \frac{ax + b}{a^2} < \frac{4ax - b}{a^2} \]

\[ ax + b < 4ax - b \]

\[ a = 3ax \]

\[ -3ax \]

\[ \frac{-2b}{-3a} \]

\[ x > \frac{2b}{3a} \]

(d) \[ a \left[ x + \frac{x - 1}{a + 1} \right] > \left[ \frac{x + 1}{a + 1} - ax \right] a > 0 \]

\[ x(a+1) + x - 1 \geq x + 1 - ax(a+1) \]

\[ ax + x + x - 1 \geq x + 1 - a^2x - ax \]

\[ a^2x - 2ax + x \geq 2 \]

\[ x(a^2 - 2a + 1) \geq 2 \]

\[ x(a-1)^2 \geq 2 \]

\[ x \geq \frac{2}{(a-1)^2} \]

Sign OK, it was $>$. 
4. Solve the following inequalities.

(c) \[ |4x - 2| \leq 8 \]
(f) \[ |3x + 3| \leq 12 \]
(i) \[ \left| 3x + \frac{1}{2} \right| \leq \frac{3}{4} \]
5. Solve the following inequalities.

(c) \[ |1 - \frac{x}{2}| > 7 \]

(f) \[ 12 - |4 - x| > 2 \]

(i) \[ |3 - \frac{x}{2}| \geq 5 \]
6. For what value(s) of \( p \) does \( \left| \frac{3x}{2} - 7 \right| \leq p - 3 \) have no solutions?

Pos #
or
zero

\( p - 3 \) must be negative to have no solution

\( p - 3 < 0 \)

\( p < 3 \)
from Friday:

Speed Solve for $x$, where $a < -1$

$$x + \frac{x - 1}{a + 1} \geq \frac{x + 1}{a + 1} - ax$$
Writing line equations:

We know how to calculate the slope (gradient)

\[ \text{slope} = \frac{\text{rise}}{\text{run}} \]

\[ m = \]

This leads us to an equation for a line, in Point-Slope form (gradient-point)
Using the definition of slope, we can get slope-intercept form of a line.

\[ m = \frac{y - b}{x - 0} \]
3 forms for a line:

slope-intercept form (gradient-intercept)

point-slope form (gradient-point)

standard form
Parallel lines have the same slope.

\[ m_1 = \]

\[ m_2 = \]

The slopes of Perpendicular lines have a product of -1

\[ m_1 = \]

\[ m_2 = \]
1. Find equation of the line that passes through 
   
   (-4,9) and (1,0)

2. Find equation of the line parallel to the line in problem 1,
   
   but passes through (-5,7)

3. Find the equation of the line perpendicular to the line in
   
   problem 1, but passes through (2,4)
4. The lines \( px - 7y + 3 = 0 \) and \( 3x - y + p = 0 \) are perpendicular. Find the value of \( p \).

Use \( \perp \) slopes have a product of -1:
5. Graph $f(x) = \frac{a}{a+1} x + a$ where $a < -1$

   label x- and y- intercepts
HW: SL book

p. 32 #1-2 MC, 3-10 (label graphs with the x and y intercepts as ordered pairs.)

p. 37 #1 LC, 2i, 3i (all by hand, show process!)

HW Quiz Tomorrow:
SL book p. 20, 25, 28

Quiz Thursday: SL 2.1 - 2.3