# Session 1.4

## Main problems

1. Solve each of the following for the variable value

   (a) $-12 = 6x + 7$

   (b) $5x + 13 = 24$

   (c) $\frac{x}{8} - 11 = -27$

   (d) $13 + \frac{x}{-5} = 8$

   (e) $4 + \frac{9}{x} = 7$

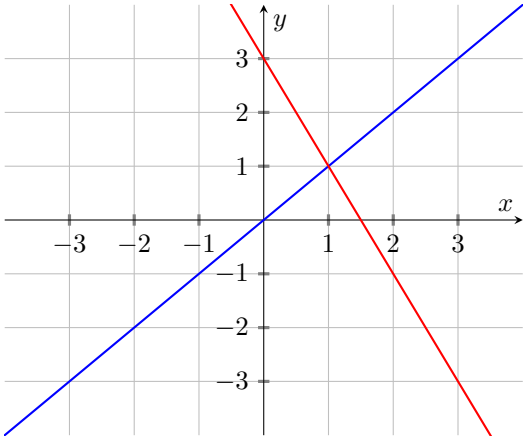
   (f) $22x - 17 = 3x(6 + 7)$

   (g) $\frac{3}{5}x - 4 = -7(2 + 9x)$

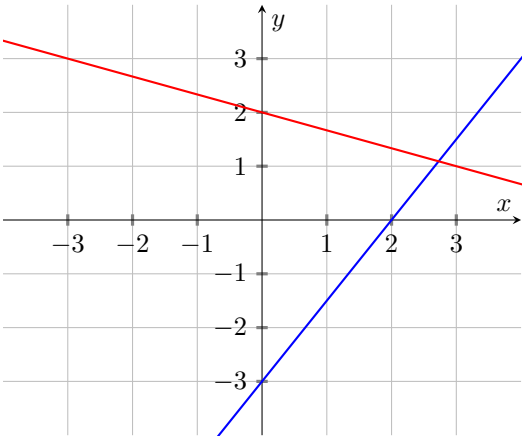
   (h) $\frac{3}{x} - 4 = 12 + \frac{7}{x}$

2. Find a few points and the slope of each of the following graphs. Note that the red and blue graphs are two different graphs (two for the price of one!). *Extra:* write it as $y = mx + b$.

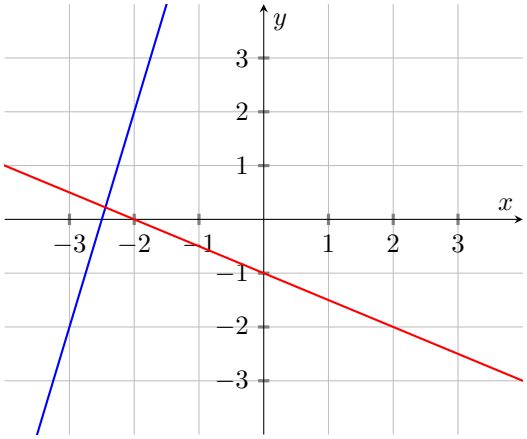
(a)



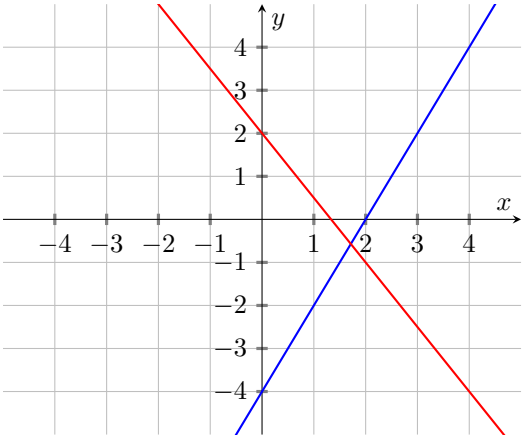

(c)




(b)




(d)



3. Find the slope and a two points $(x, y)$ for each equation

   (a) $y + 4x = 7$
   (b) $y = -2x + 1$
   (c) $3x + 2y = 2$
   (d) $y = -\frac{3}{4}x - 2$
   (e) $y = \frac{2}{3}x - 1$
   (f) $-5x + 3y = 6$
   (g) $y = -\frac{6}{5}x + 4$
   (h) $4x + 2y = 5$

4. Draw a number line for each inequality to show which values of $x$ satisfy it

   (a) $|x| \geq 3$
   (b) $\left|\frac{x}{3}\right| \geq 6$
   (c) $|x - 2| \geq 4$
   (d) $|x| + 2 \leq 9$
   (e) $\left|\frac{x}{4}\right| \geq 12$
   (f) $\left|\frac{x}{4}\right| \leq 7$
   (g) $|-6x| \leq 24$
   (h) $|x + 4| \leq 11$
   (i) $|3 + 2x| \leq 8$
   (j) $|2 + 3x| \geq 12$

## More problems

1. Find the slope between the two points. *Extra:* find the equation of the line containing both points.

   (a) $(0, 4), (6, 10)$
   (b) $(6, 7), (3, 8)$
   (c) $(9, 5), (-10, 24)$
   (d) $(-3, -23), (-7, -7)$
   (e) $(5, 12), (-3, 0)$
   (f) $(7, -17), (-8, -15)$

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

   (a) $y = |x|$
   (b) $y = |3x|$
   (c) $y = |x| + 1$
   (d) $y = |x + 2|$
   (e) $y = |x - 4| - 1$
   (f) $y = |x + 2| + 2$
   (g) $y = -|x + 5| - 1$
   (h) $y = -|x - 5| + 2$

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

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