Name:_____   Date:_____

Homework sheet: Alg2H
Lines, slopes, and more: Intro 2

1. (Book1 249**) Let $P = (x, y)$ and $Q = (1, 5)$.

   a. Write an equation that states that the slope of line PQ is 3.

   b. Show how this slope equation (from previous part) can be rewritten in the form

   $$y - 5 = 3(x - 1)$$

   c. This linear equation is said to be in point-slope form. Explain the terminology.

   d. Find coordinates for three different points P that fit this equation.

Problems denoted with ** mark are taken from Exeter Phillips Academy (NH) math curriculum.

2. (Book1 250**) (Continuation) What do the lines

$$y = 3(x - 1) + 5,$$
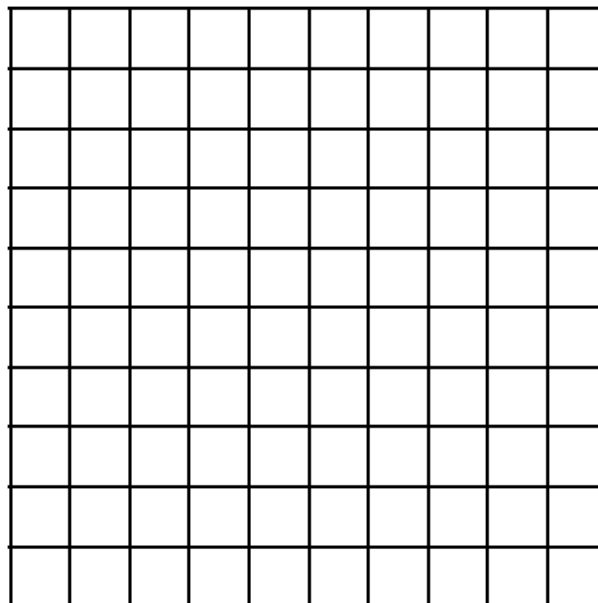$$y = 2(x - 1) + 5, \text{ and}$$
$$y = -\frac{1}{2}(x - 1) + 5$$

all have in common? How do they differ from each other?

3. (Book1 199**) By hand (meaning only paper and pencil, or in your head), find coordinates for the points where the line

$$3x + 2y = 12$$

intersects the x-axis and the y-axis. These points are called the x-intercept and y-intercept, respectively. Use these points to make a quick sketch of the line.

4. (Book1 202**) Using a graphing tool (TI calculator, Desmos, etc), with the window set as $-10 \leq x \leq 10$ and $-10 \leq y \leq 10$, graph the line $y = 0.5x + 3$. Notice that you can see both axis intercepts. Now graph $y = 0.1x + 18$ using the same window settings. What happens? Why? Calculate by hand the axis intercepts and adjust your window so that they are visible. Try and hand-draw the result in the space below.

How to set axis window in Desmos:
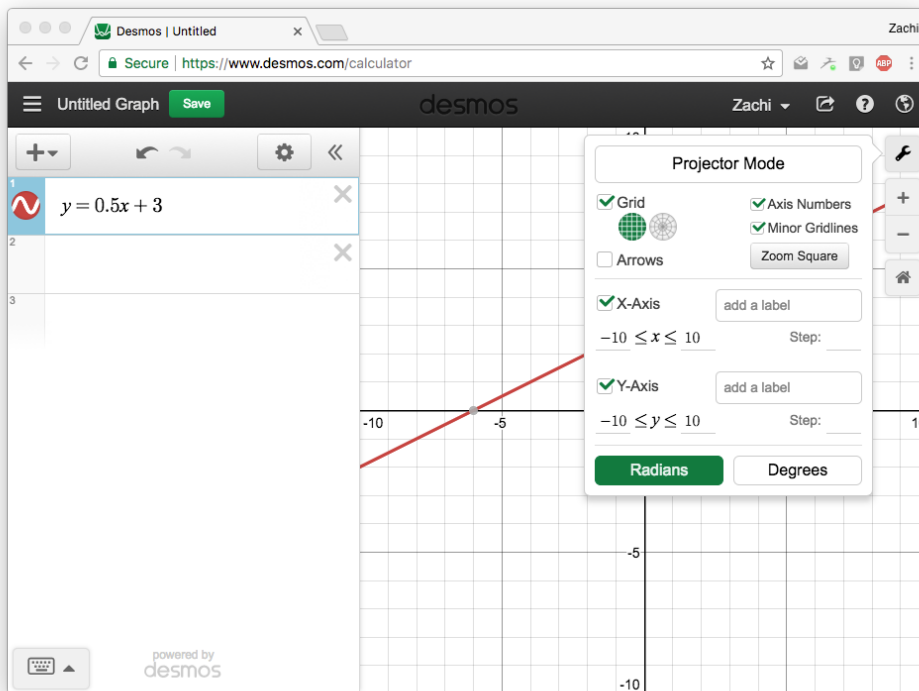
5. Absolute value review: (In the book, pages 87-90)

Page 88:

(a)	(b)
(c)	(d)
(e)	

(f)	(g)
(h)	

Page 91:

(1)	(5)
(10)	(18)

(21)	(23)