Function Homework – Lines*

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Abstract

This module provides sample problems designed to develop some concepts related lines and graphing.

Exercise 1

You have $150 at the beginning of the year. (Call that day "0".) Every day you make $3.

- **a.** How much money do you have on day 1?
- **b.** How much money do you have on day 4?
- **c.** How much money do you have on day 10?
- **d.** How much money do you have on day n? This gives you a general function for how much money you have on any given day.
- **e.** How much is that function going up every day? This is the slope of the line.
- **f.** Graph the line.

Exercise 2

Your parachute opens when you are 2,000 feet above the ground. (Call this time $t = 0$.) Thereafter, you fall 30 feet every second. (Note: I don't know anything about skydiving, so these numbers are probably not realistic!)

- **a.** How high are you after one second?
- **b.** How high are you after ten seconds?
- **c.** How high are you after fifty seconds?
- **d.** How high are you after t seconds? This gives you a general formula for your height.
- **e.** How long does it take you to hit the ground?
- **f.** How much altitude are you gaining every second? This is the slope of the line. Because you are falling, you are actually gaining negative altitude, so the slope is negative.
- **g.** Graph the line.

Exercise 3

Make up a word problem like exercises #1 and #2. Be very clear about the independent and dependent variables, as always. Make sure the relationship between them is linear! Give the general equation and the slope of the line.

Exercise 4

Compute the slope of a line that goes from $(1, 3)$ to $(6, 18)$.

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Exercise 5

For each of the following diagrams, indicate roughly what the slope is.

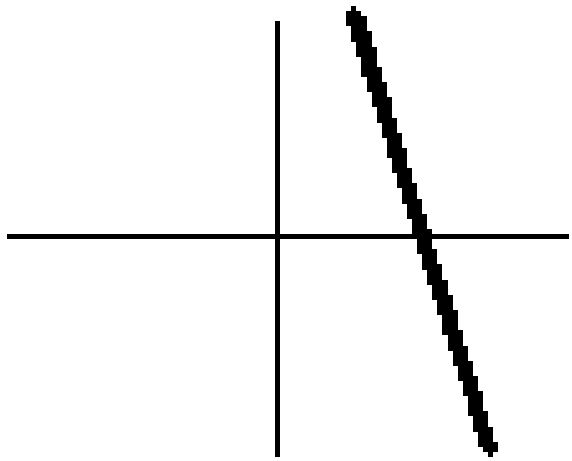

Figure 1: a.

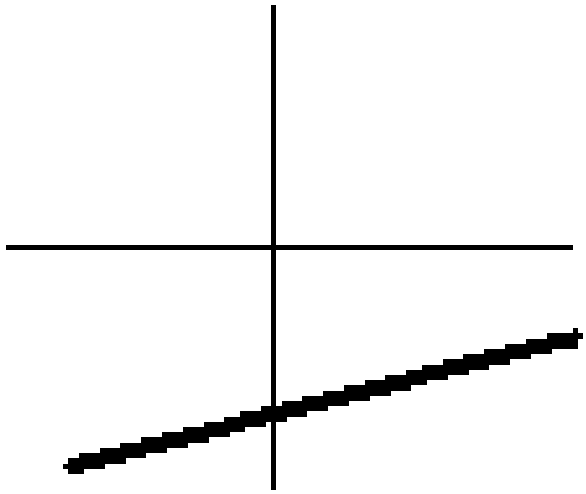

Figure 2: b.

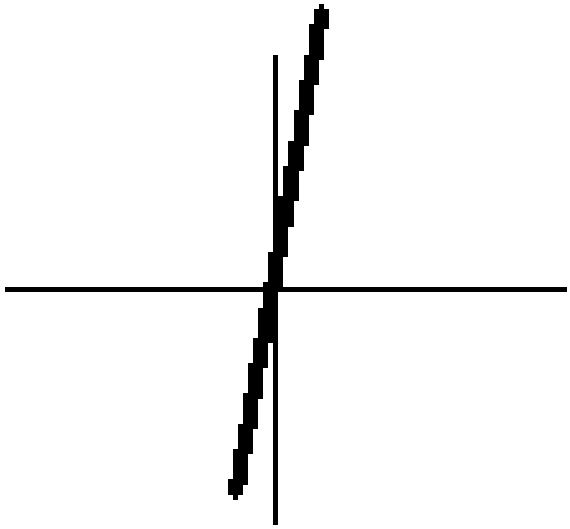

Figure 3: c.

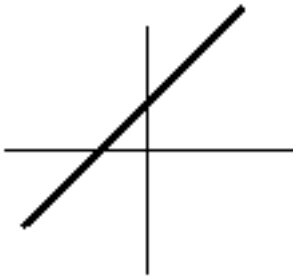

Figure 4: d.

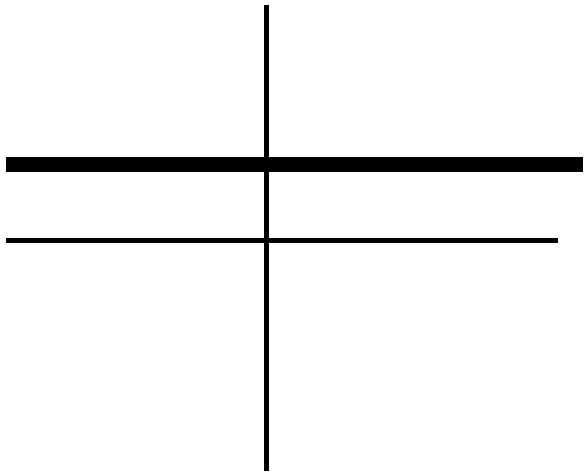

Figure 5: e.

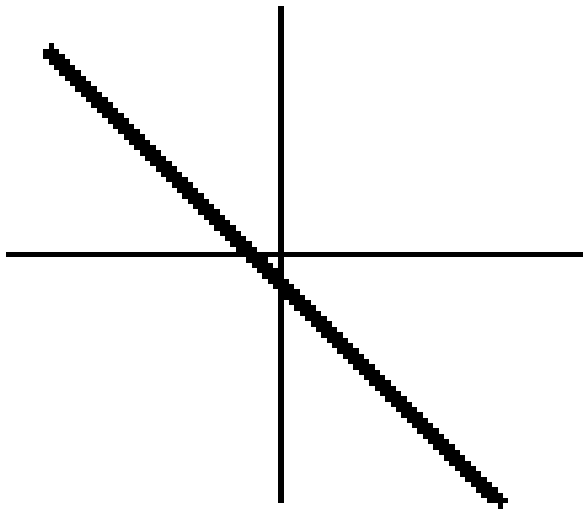

Figure 6: f.

Exercise 6

Now, for each of the following graphs, draw a line with roughly the slope indicated. For instance, on the first little graph, draw a line with slope 2.

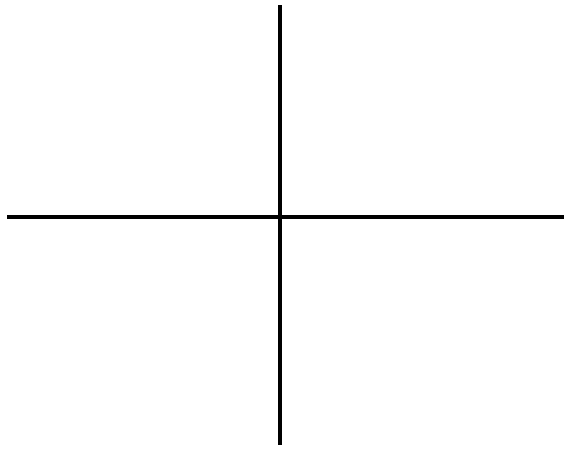

Figure 7: b. Draw a line with slope $m = \frac{-1}{2}$

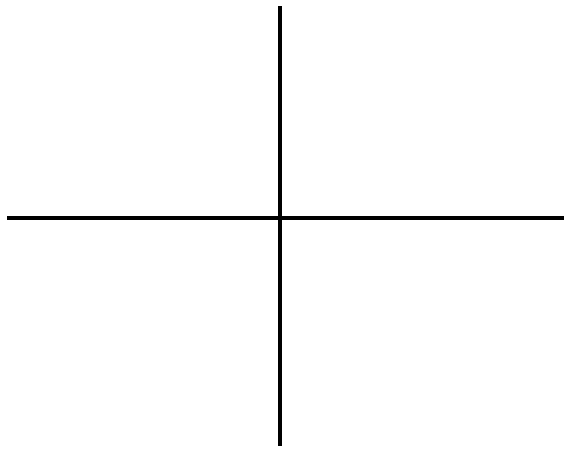

Figure 8: b. Draw a line with slope $m = \frac{-1}{2}$

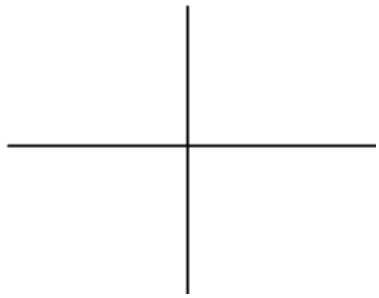

Figure 9: c. Draw a line with slope m=1

For problems 7 and 8,

- Solve for y, and put the equation in the form $y = \mathrm{mx} + b$ (...if it isn't already in that form)
- Identify the slope
- Identify the y-intercept, and graph it
- Use the slope to find one point other than the y-intercept on the line
- Graph the line

Exercise 7

$y = 3x - 2$

Slope:_____

y-intercept:_____

Other point:_____

Exercise 8

$2y - x = 4$

Equation in $y = \mathrm{mx} + b$

Slope:_____

n-intercept:_____

Other point:_____