Class Discussion

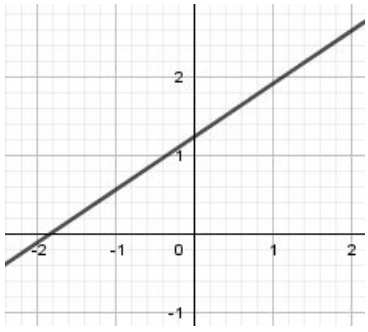
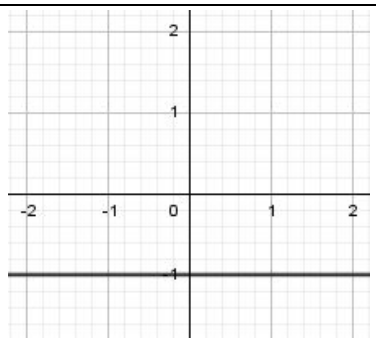
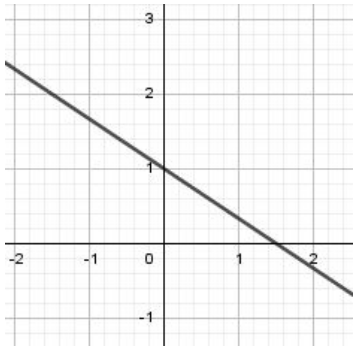
Unit 1 Topic 1 Lines in a plane

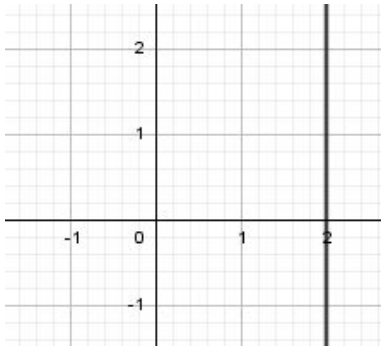
The basics:

- Slope:

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

As powerful as a slope can describe the lines in a plane, its limitation comes when the slope of a given line in a plane is undefined.

$m > 0$	
$m = 0$	
$m < 0$	

m is unefined.	

Point-Slope Form:

Any given line with slope m (this implies that m is defined), can be written in the following form

$$y - y_1 = m(x - x_1)$$

Where (x_1, y_1) is a point on the line.

Relationships between slopes of a pair of parallel lines and a pairs of perpendicular lines (m_1 , m_2)

- Parallel lines: $m_1 = m_2$
- Perpendicular lines: $m_1 \cdot m_2 = -1$

Ex1: Given a point $(\frac{2}{5}, -1)$ and a line $3x - 2y = 6$

(a) find the parallel line that passes through the given point

(b) find the perpendicular line that passes through the given point

Explanation of interval notations:

Ex2: For the following functions find

(a) domain (b) range (c) y-intercept (d) x-intercept

$$f(x) = x^2 - 3x + 2$$

$$g(x) = \begin{cases} 2 - x, & x > 3 \\ x^2 - 4, & x \le -2 \end{cases}$$

(Write your answers in the interval notations whenever it applies)