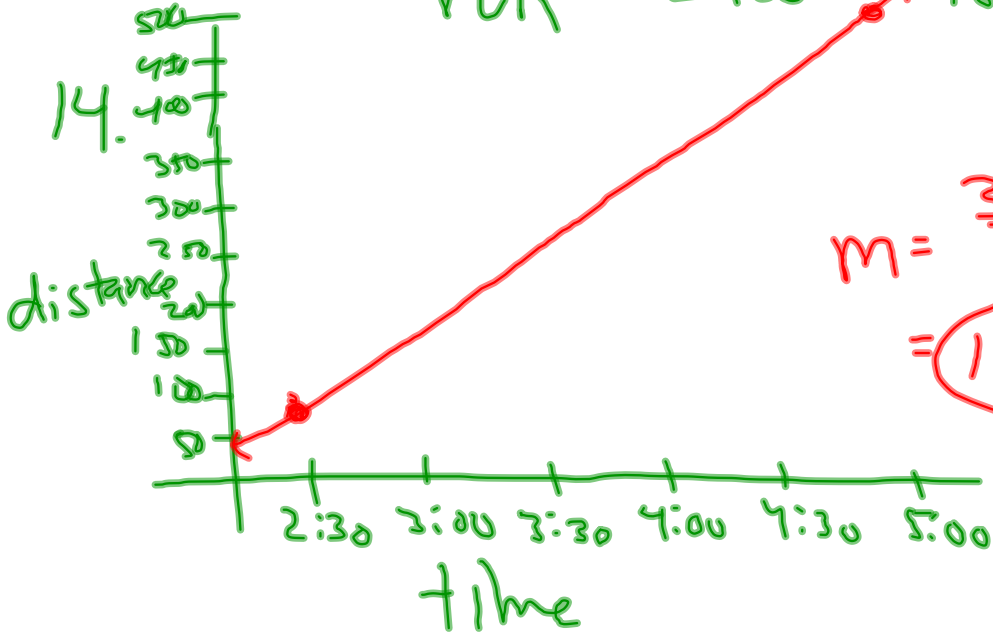


$$m = \frac{\text{rise}}{\text{run}} = \frac{1150}{2400} = \frac{-23 \text{ m}}{48 \text{ km}}$$



$$m = \frac{375 \text{ m}}{2.5 \text{ hr}} = 150 \text{ mph}$$

0-6+

7-11V

12 9-

3.6 Lines

Equations of lines

1. vertical line : $x = a$

2. horizontal line : $y = b$

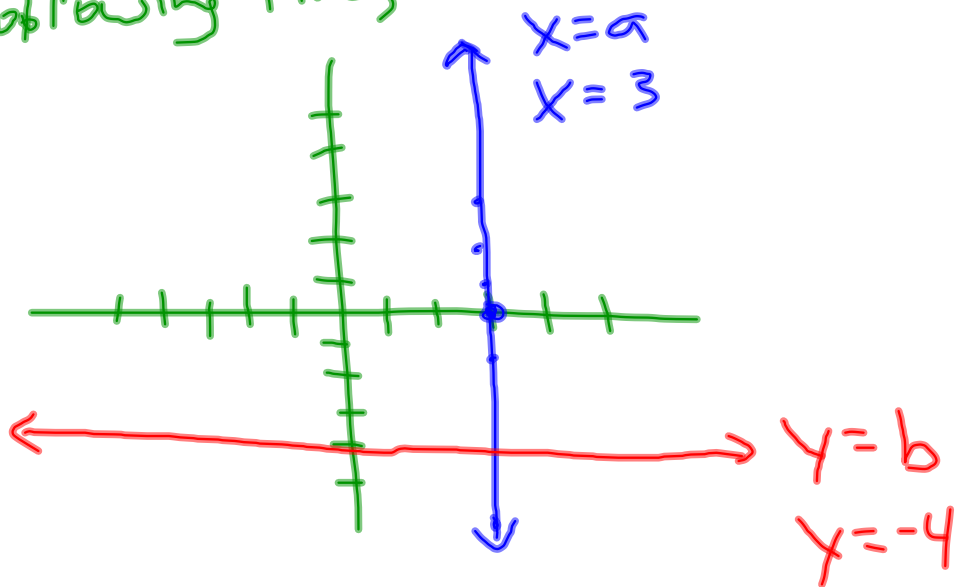
3. Slope-intercept form: $y = mx + b$

4. Point-slope form: $y - y_1 = m(x - x_1)$

Annotations for $y - y_1 = m(x - x_1)$:

- Red arrows: m is labeled "Slope", b is labeled "y-int."
- Green arrows: y_1 is labeled "y-coord.", m is labeled "slope", x_1 is labeled "x-coord."

Ex: Write the equation of the following lines



Ex: Write the equation of a line in point slope form given $m=2$ and through $(-4, 5)$.

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

$$y - 5 = 2(x + 4)$$

Ex: Write the equation in slope intercept form of the line thru $(-1, 0)$ and $(1, 2)$.

$$m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{0 - 2}{-1 - 1} = \frac{-2}{-2} = 1$$

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

$$y - 0 = 1(x + 1)$$

$$y = x + 1$$

Pairs of lines

Parallel lines: Same slopes, different intercepts.

Coincidental line: Same slope, same intercept

Perpendicular lines: slopes are opposite reciprocals
 $\frac{2}{3} \rightarrow -\frac{3}{2}$

Intersecting lines: slopes are different

HW: P. 194

2-36 even,

odds extra credit