Quiz:

4.1 - 4.5 on Tuesday 3/13

Keep each technique clear!

$2x + 3y = 17$

find slope ...

Homework Review: 4.4

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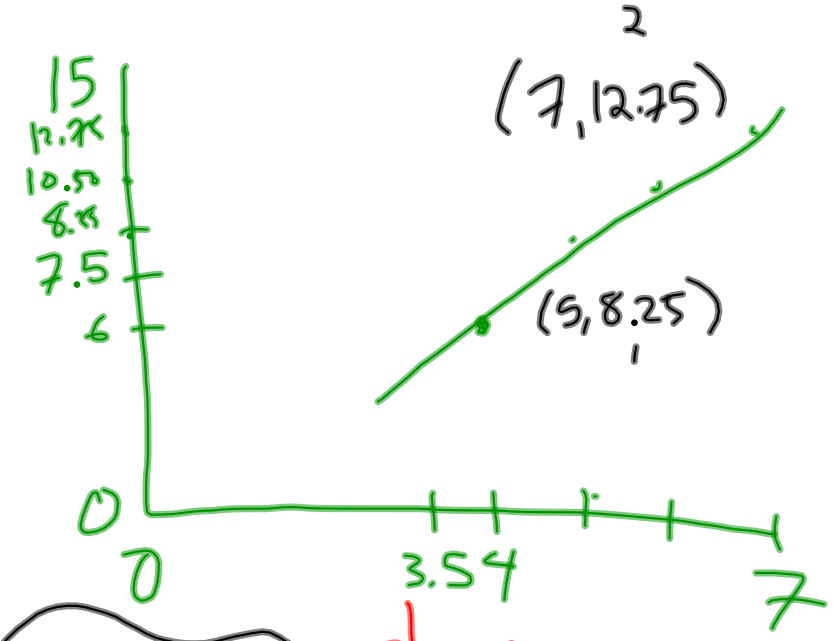

$2.25/day to rent a movie

Rate of change = Slope =

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

$$m = \frac{12.75 - 8.25}{7 - 5}$$

$$= \frac{4.5 \text{ dollars}}{2 \text{ days}}$$

$m = 2.25$

(24) $(x_2, 4)$ and $(6, -1)$ $m = \frac{5}{6}$

y_2 x_1 y_1

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

$$\frac{5}{6} = \frac{4 - -1}{x_2 - 6}$$

$$\frac{5}{6} = \frac{5}{x_2 - 6}$$

$$5(x_2 - 6) = 6 \cdot 5$$

$$5x_2 - 30 = 30$$

$+30 \quad +30$

$$\frac{5x_2}{5} = \frac{60}{5}$$

$$x_2 = 12$$

11 $(1,3)$ $(3,-2)$

2 1

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3+2}{1-3} = \frac{5}{-2}$$

$$m = \frac{-5}{2}$$

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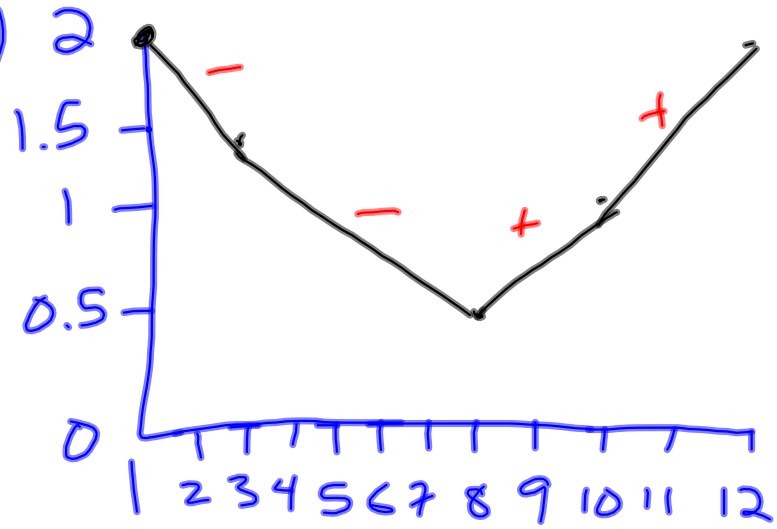


decreasing (− slope) for 1st 8h

increasing (+ slope) for next 4h

Slope-Intercept Form:

$2x - 4y = 16$

$-2x \qquad -2x$

$\frac{-4y}{-4} = \frac{-2x}{-4} + \frac{16}{-4}$

$y = \frac{1}{2}x + -4$

m = slope

b = y-intercept

Solve for y ...

Always a linear equation

Tells you slope and y-intercept

Why does it work?

$2x - 3y = 5$

$2(2) - 3y = 5$
$4 - 3y = 5$
$-4 \quad -4$
$\frac{-3y}{-3} = \frac{1}{-3}$
$y = -\frac{1}{3}$

$2(1) - 3y = 5$
$-2 \quad -2$
$\frac{-3y}{-3} = \frac{3}{-3}$
$y = -1$

Find the slope...

$x_1\ 1 \quad -1\ y_1$
$x_2\ 2 \quad -\frac{1}{3}\ y_2$

$m = \frac{y_2 - y_1}{x_2 - x_2} = \frac{-\frac{1}{3} - -1}{2 - 1}$

$-\frac{1}{3} + +1 =$
$-\frac{1}{3} + \frac{3}{3} = \frac{2}{3} = m$

Find the y-intercept...

$2(0) - 3y = 5$
$\frac{-3y}{-3} = \frac{5}{-3}$
$y = \frac{-5}{3} = b$

OR - solve for y

$2x - 3y = 5$
$-2x \quad -2x$
$\frac{-3y}{-3} = \frac{-2x}{-3} + \frac{5}{-3}$

$y = \frac{2}{3}x + \frac{-5}{3}$
$m \quad\quad b$

4. $12x + 3y = 9$

$y = -4x + 3$

5. $6x - 2y = 2$

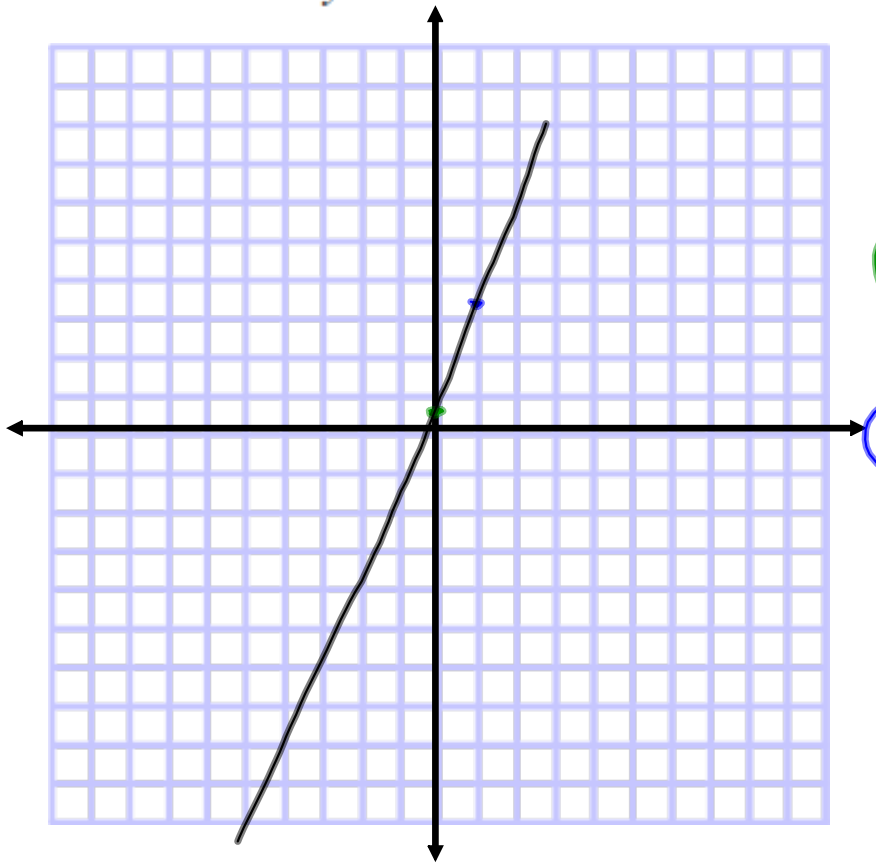
$y = 3x + -1$

6. $2x + 5y = 10$

$y = \frac{-2x + 2}{5}$

Graph using slope-intercept form:

$9x - 3y = -1$



① Solve for y... $y = 3x + \frac{1}{3}$ ($m = 3$, $b = \frac{1}{3}$)

$9x - 3y = -1$

$-9x \quad -9x$

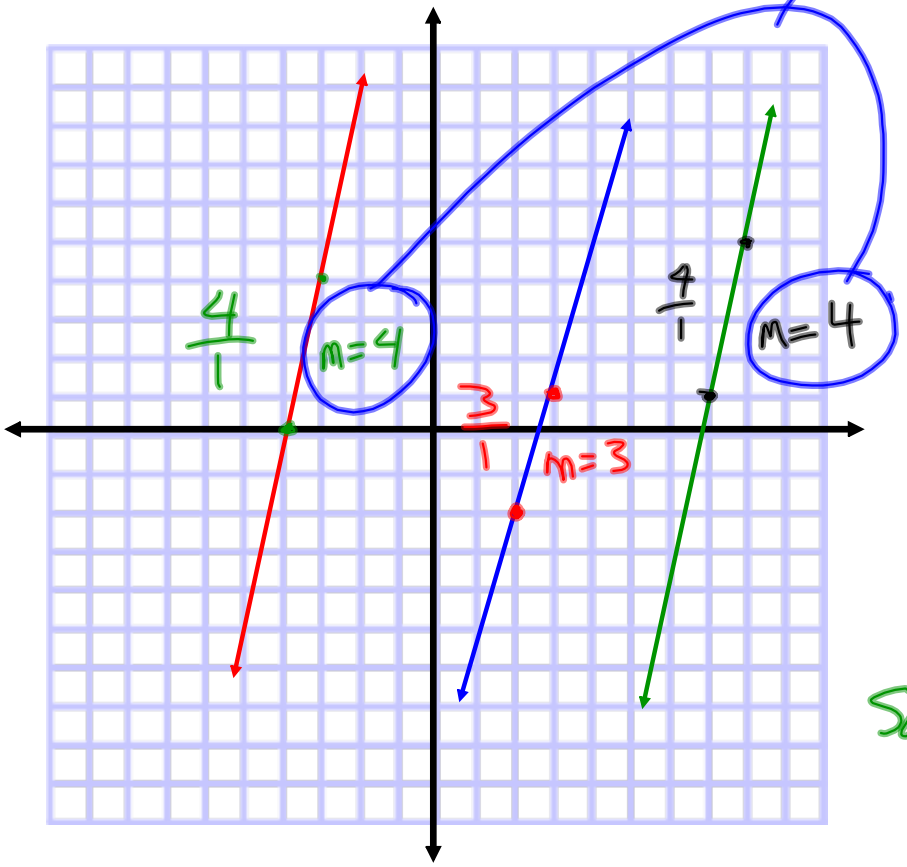
$\frac{-3y}{-3} = \frac{-9x - 1}{-3}$

② Plot the y-intercept $(0, \frac{1}{3})$

③ Use slope to find a second point

$m = \frac{\text{rise}}{\text{run}} = \frac{3}{1}$

Parallel Lines:



same slope = parallel

Have the same slope

Identify by finding slope or equation...

$y = \frac{-2}{3}x + 4$

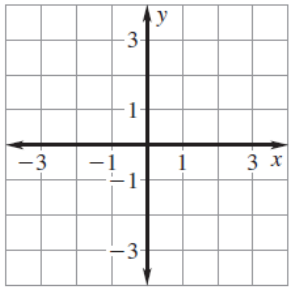
$y = \frac{-2}{3}x + 3.6281457\pi e^{2}$

same slope = parallel

$\sqrt{432e^{-4}}$

Graph each line; write the equation of a parallel line

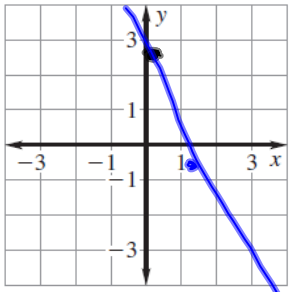
13. $7x - y = 3$



$\frac{-3}{1} = m$

$(0, \frac{5}{2})$

14. $6x + 2y = 5$



$6x + 2y = 5$

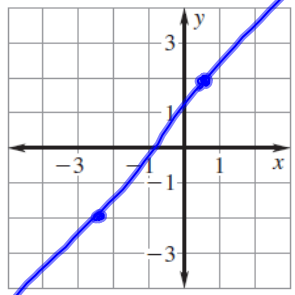
$-6x \quad -6x$

$\frac{2y}{2} = \frac{-6x}{2} + \frac{5}{2}$

$y = -3x + \frac{5}{2}$

slope, y-int.

15. $4x - 3y = -6$



$4x - 3y = -6$

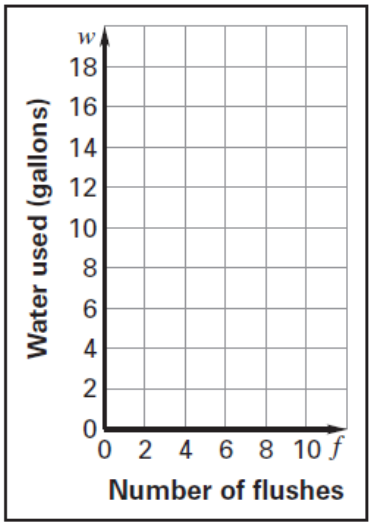
$-4x \quad -4x$

$\frac{-3y}{-3} = \frac{-4x}{-3} - \frac{6}{-3}$

$y = \frac{4}{3}x + 2$

$m = \frac{4}{3}$, $(0, 2)$

Water Usage A new toilet model has two different flush settings in order to conserve water. One setting uses 1.6 gallons of water per flush and the other setting uses 0.8 gallon of water per flush. The total amount w (in gallons) of water used in the first setting is given by the equation $w = 1.6f$ where f is the number of times the toilet is flushed. The total amount of water used in the second setting is given by the equation $w = 0.8f$.



a. Graph both equations in the same coordinate plane. What do the slopes and the w-intercepts mean in this situation?

b. How much more water is used by the first setting if the toilet is flushed 10 times?

Homework:

p. 247 2-38 (even), 40