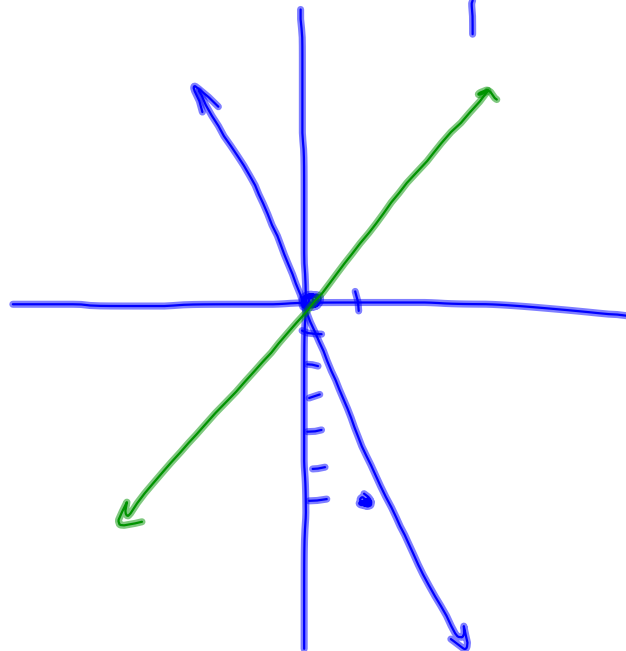


Homework Review - 4.7

(32)

$$K(x) = \underline{-6x}$$



- Stretch/shrink + reflection
- Steeper slope
- Goes from upper left to lower right

(40)

1998-2003

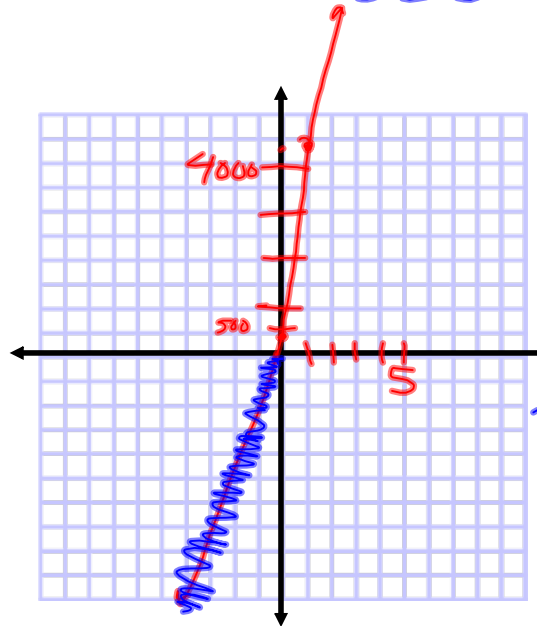
 x = the number of years since 1998

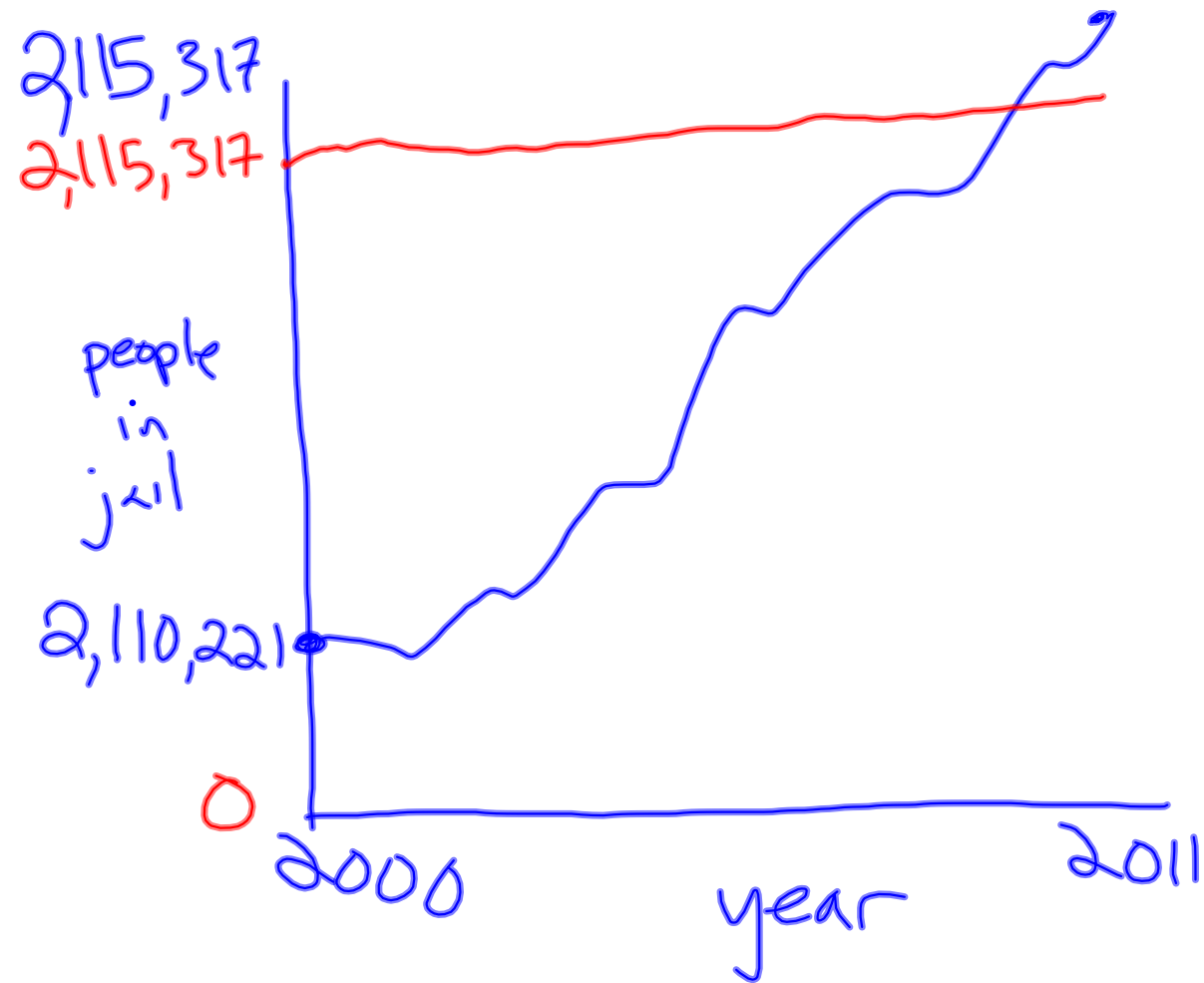
1998: 330 sales

every year after: 4250 additional sales

$$f(x) = 4250x + 330$$

(3, 13080)

Domain:
 $x = 0, 1, 2, 3, 4, 5$ Range:
 $f(x) = 330$
 4580
 8830
13080
 17330
 21580



Linear Inequalities in Two Variables

$$y < x + 4$$
$$2x - 3y \geq 14$$

What is it? (Looks like an equality with $<$, $>$)

$(2, 5)$

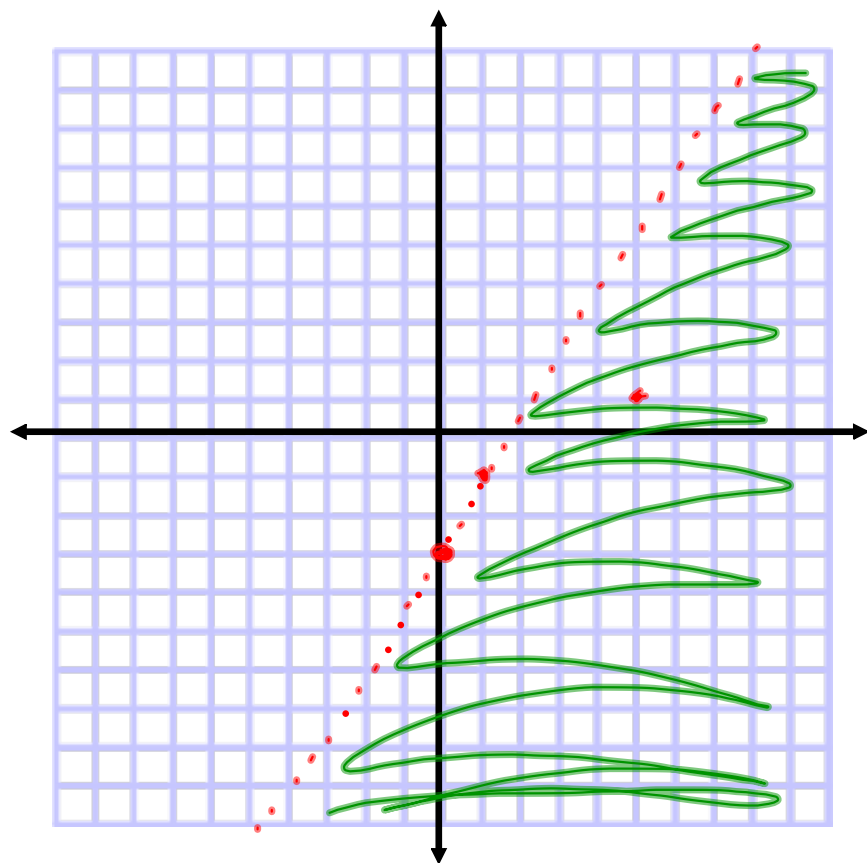
$$5 < 2 + 4$$
$$\checkmark 5 < 6$$
$$2(2) - 3(5) \geq 14$$
$$4 - 15 \geq 14$$
$$-11 \geq 14 \quad \times$$

Finding solutions

Graphing Linear Inequalities

$$y < 2x - 3$$

$$y = 2x - 3$$



Graph the equivalent equation

- dotted line for $<$, $>$

- solid line for \leq , \geq

\leq \geq

Test a point away from the boundary

$(5, 1)$

$$1 < 2(5) - 3$$

$$1 < 10 - 3$$

$$1 < 7$$

Shade the appropriate $1/2$ plane

Graphing Linear Inequalities, cont.

$$2x + 3y \leq -4$$

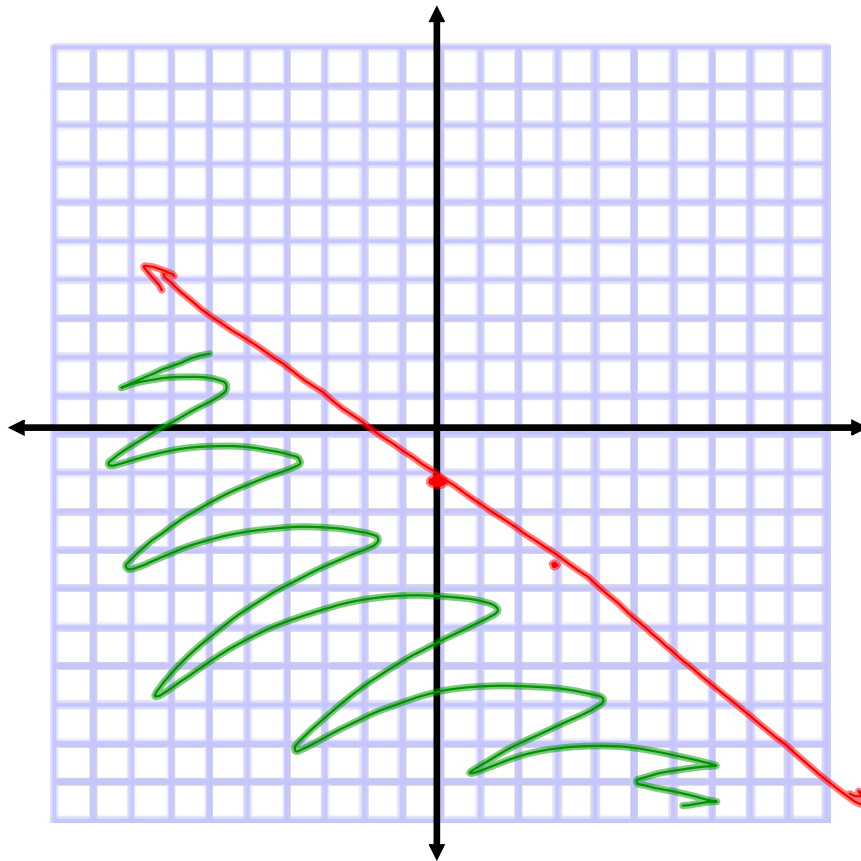
$$\begin{array}{r} 2x + 3y \leq -4 \\ -2x \quad -2x \end{array}$$

$$y \leq -\frac{2}{3}x - \frac{4}{3}$$

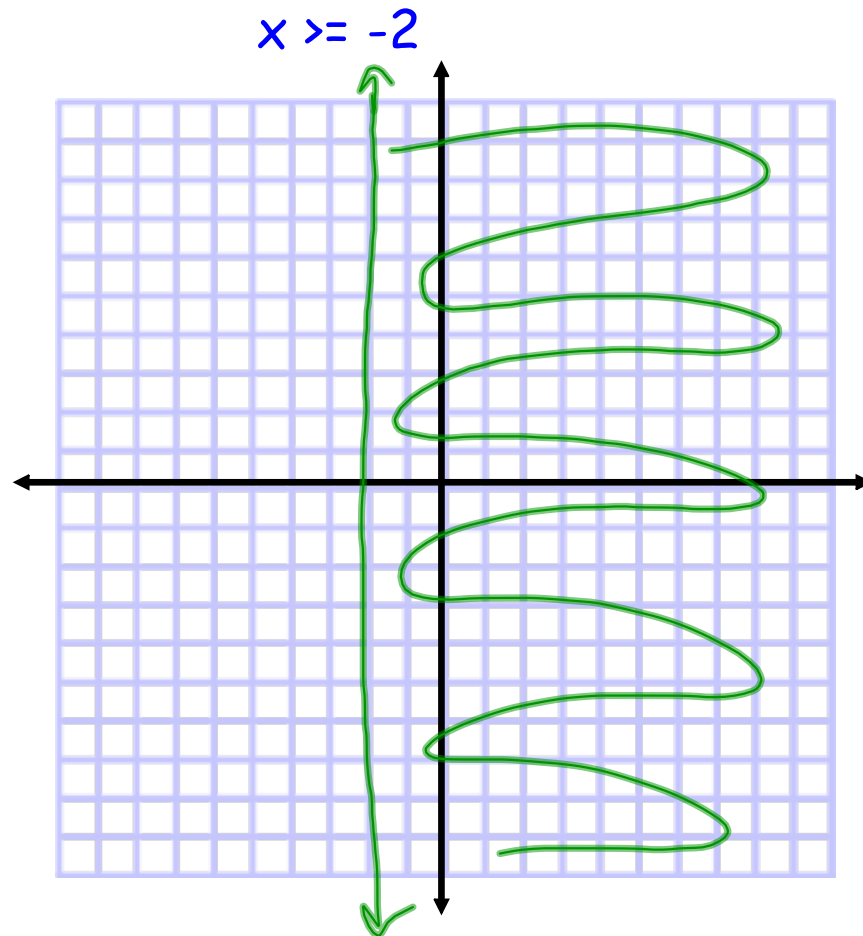
$$\begin{array}{r} 3y \leq -2x - 4 \\ \frac{3y}{3} \leq \frac{-2x}{3} - \frac{4}{3} \end{array}$$

Or - after graphing the line, solve for y and use the direction of the inequality to determine which 1/2 plane to shade

$$-\frac{4}{3} = -1\frac{1}{3}$$



Graphing Linear Inequalities - one variable



Graph the equivalent line

Test a coordinate and shade
OR use the direction of the
inequality to determine which
1/2 plane to shade

Tell whether the ordered pair is a solution of the inequality.

1. $x + y > -9$; $(0, 0)$

2. $x - y \geq 8$; $(14, 9)$

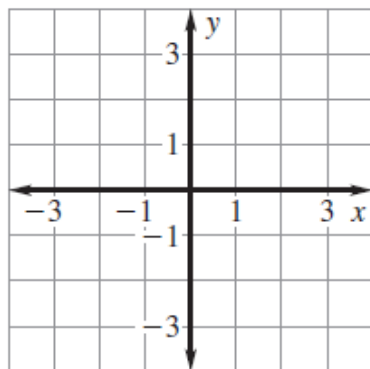
3. $2x - y > 4$; $(-6, -15)$

4. $2x + y > -5$; $(-5, 12)$

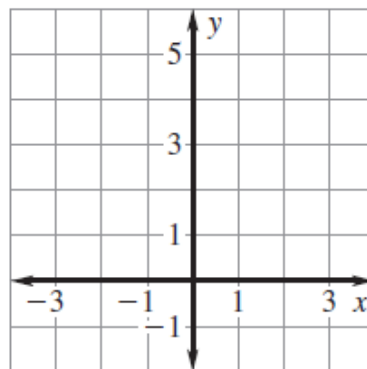
5. $5x + 2y \leq 8$; $(-3, 6)$

6. $4x - 3y \geq -5$; $(6, 8)$

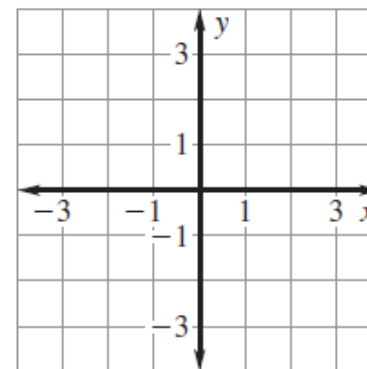
13. $4y \leq 6x - 2$



14. $5y \leq 10x + 15$

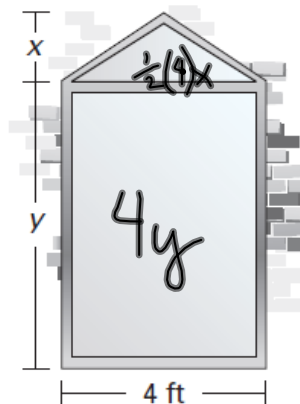
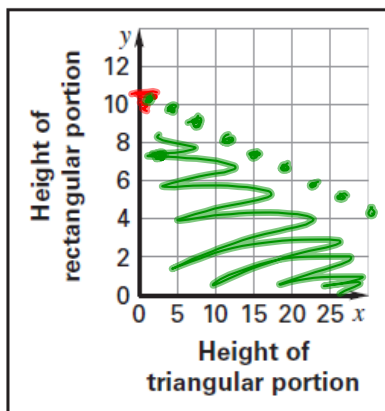


15. $6y + 3 \geq -18x$



Window The area of the window shown is less than 42 square feet. Let x and y represent the heights of the triangular and rectangular portions of the window, respectively.

- Write and graph an inequality that describes the different dimensions of the window.
- Could the height of the triangular portion be 2 feet and the height of the rectangular portion be 8 feet?



yes
 $a < 42$ sq feet
 x = height of tri.
 y = height of rect.
 4ft = width

$$\begin{aligned} \frac{1}{2}(4)(x) + 4y &< 42 \\ 2x + 4y &< 42 \\ -2x &\quad -2x \\ \frac{4y}{4} &< \frac{-2x + 42}{4} \\ y &< -\frac{1}{2}x + 10\frac{1}{2} \end{aligned}$$

Homework:

p. 409; 3-12 by 3, 17-33 by 3, 53, 57, 58