

1. Write a linear equation that best fits the data. Predict the output (y value) if the input (x value) is 15.

1	2	3	4	5	6	7	8	9	10
68	95	126	152	187	215	250	276	309	340

$$y = 30.4x + 34.5$$

2. Evaluate the following.

$$f(x) = \begin{cases} 6x - 4, & x \leq 1 \\ -4x^2 + 2, & 1 < x < 5 \\ -2x + 3, & x \geq 5 \end{cases}$$

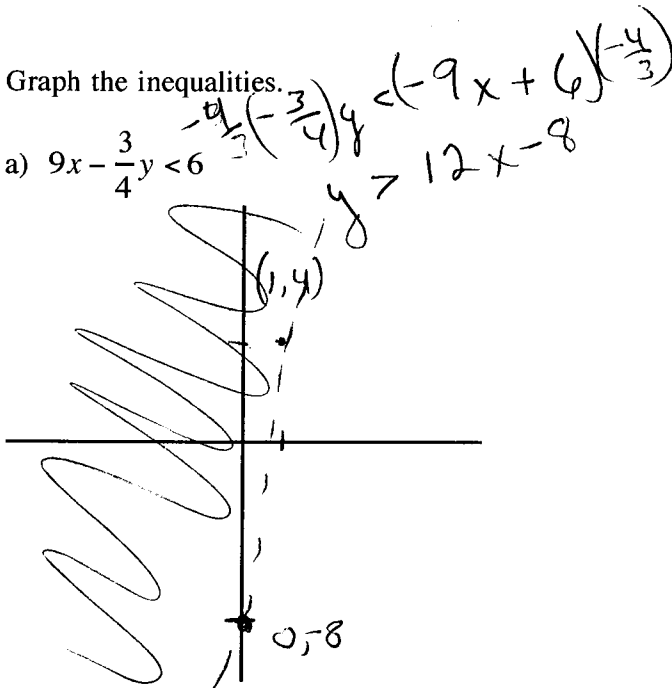
a) $f(-4) = -28$

b) $f(10) = -17$

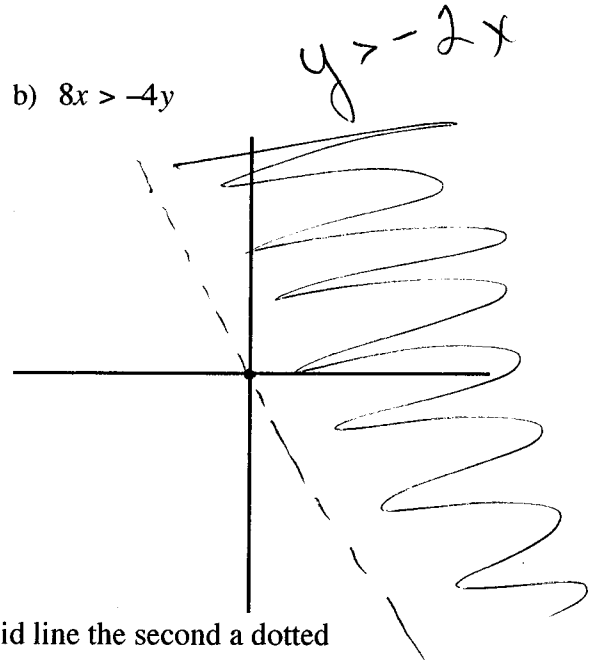
c) $f(3) = -34$

3. Graph the inequalities.

a) $9x - \frac{3}{4}y < 6$

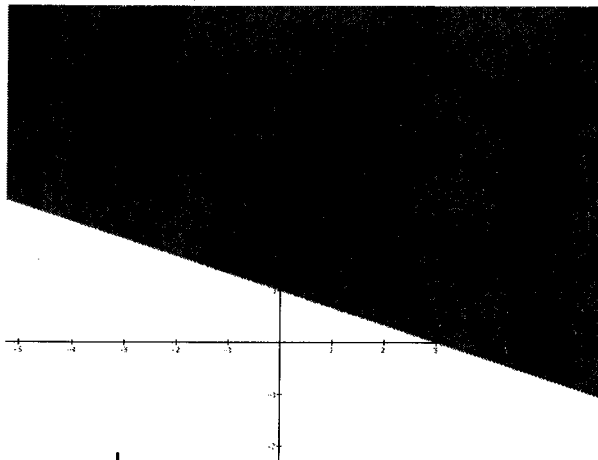


b) $8x > -4y$



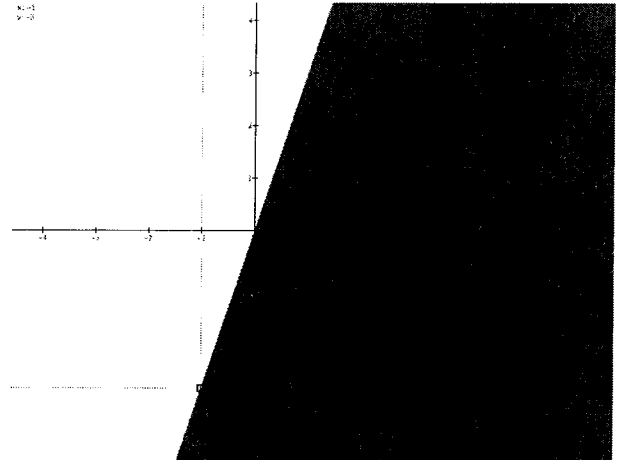
4. Write an inequality for the following. The first graph has solid line the second a dotted

a)



$$y > -\frac{1}{3}x + 1$$

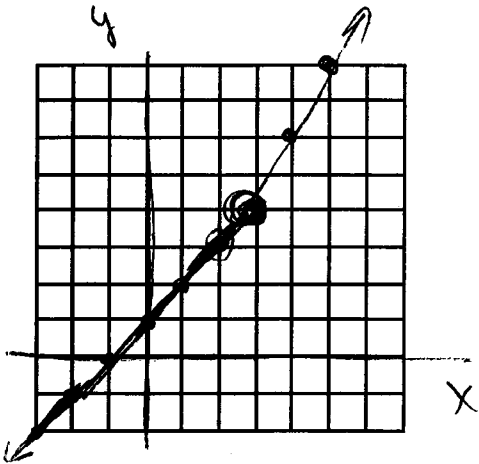
b)



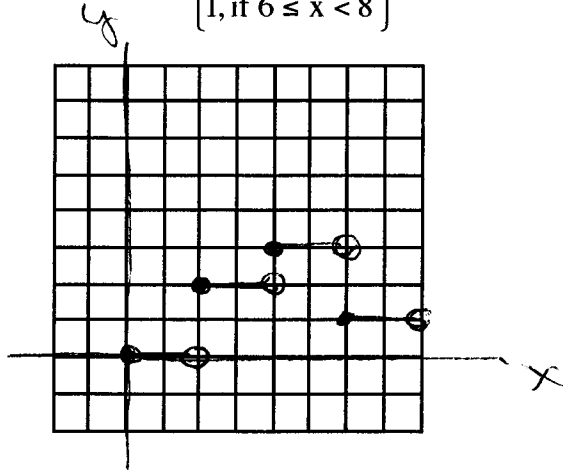
$$y < 3x$$

5. Graph the following piecewise functions.

a) $f(x) = \begin{cases} x+1, & \text{if } x < 3 \\ 2x-2, & \text{if } x \geq 3 \end{cases}$

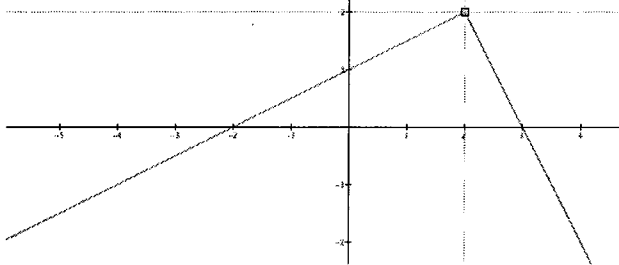


b) $f(x) = \begin{cases} 0, & \text{if } 0 \leq x < 2 \\ 2, & \text{if } 2 \leq x < 4 \\ 3, & \text{if } 4 \leq x < 6 \\ 1, & \text{if } 6 \leq x < 8 \end{cases}$

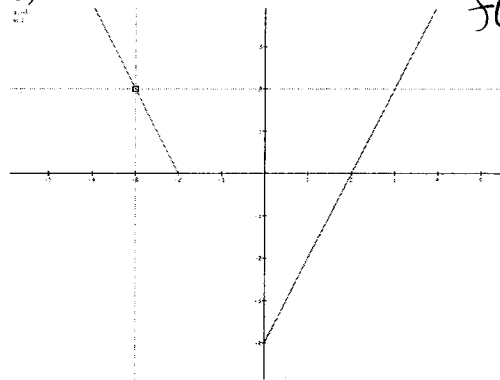


6. Write a piecewise function for the following. The left line has a solid dot and the right has an open

a) $f(x) = \begin{cases} \frac{1}{2}x + 1, & x \leq 2 \\ -2x + 6, & x > 2 \end{cases}$



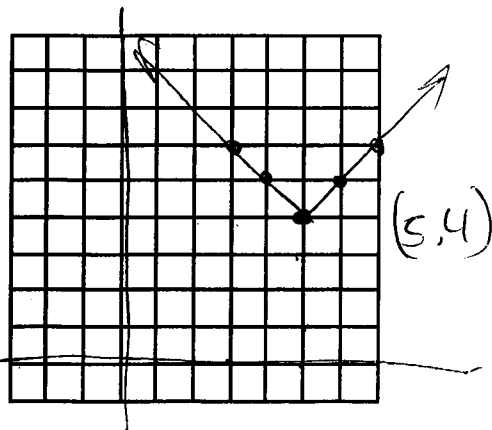
b)



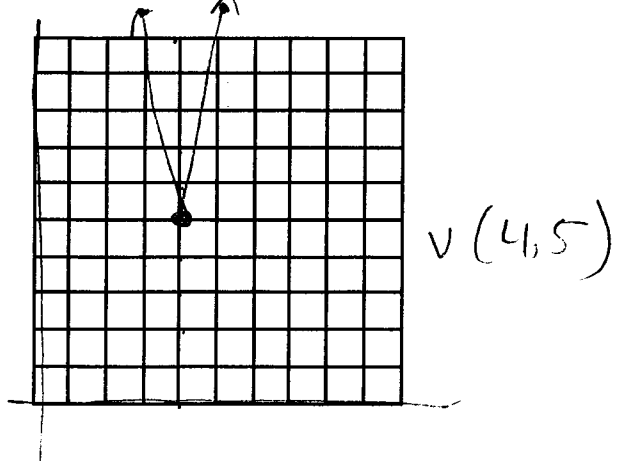
$f(x) = \begin{cases} -2x - 4, & x \leq 2 \\ 2x - 4, & x > 2 \end{cases}$

7. Graph each of the following. Label the vertex.

a) $y = |x - 5| + 4$



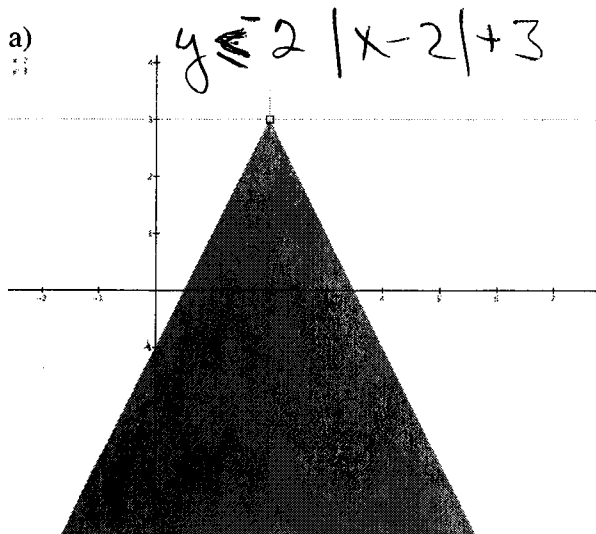
b) $y = 2|3x - 12| + 5$



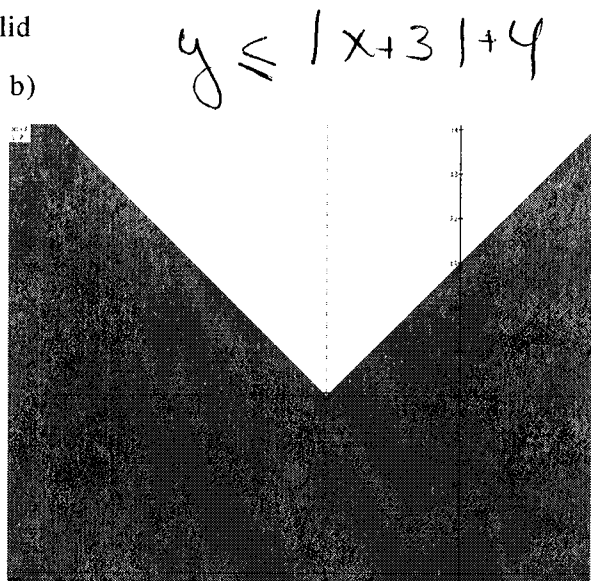
$$0 < -1$$

8. Write an inequality for the following. All lines are solid

a)



b)



9. The population, P (in 1,000's), of a town can be modeled by $P = 2|t - 6| + 4$, where $t = 0$ represents 1990. During which two years does the town have a population of 8000?

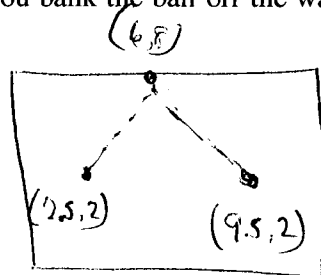
1994, 1998

10. You are trying to make a hole-in-one at the miniature golf national championships. Imagine a coordinate plane is over the putting green. Your ball is at $(2.5, 2)$ and you bank the ball off the wall at $(6, 8)$.

a) Write an equation to represent the path of the ball.

$$y = -\frac{12}{7}|x-6|+8$$

b) The hole is at $(9.5, 2)$, did the ball go in the hole?



$$m = \frac{8-2}{6-2.5}$$

$$m = \frac{6}{3.5}$$

$$m = \frac{60}{35} = \frac{12}{7}$$

$$2 = -\frac{12}{7}|9.5-6|+8$$

$$2 = -\frac{12}{7}|\frac{7}{2}|+8$$

$$2 = -6+8$$

$$2 = 2 \quad \text{yes}$$