

Name Solutions
Trigonometry & Precalculus

Date _____
Mr. Lupinacci

REVIEW FOR TEST #2

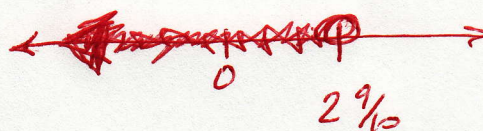
Solve and graph each inequality on a number line:

1. $5 + 2x < 4(6 - 2x)$

$$\begin{array}{r} 5 + 2x < 24 - 8x \\ -5 + 8x \quad -5 + 8x \\ \hline 10x < 29 \end{array}$$

$$x < \frac{29}{10}$$

$$x < 2\frac{9}{10}$$



2. $|3x - 6| \geq 24$

$$3x - 6 \geq 24$$

$$3x \geq 30$$

$$x \geq 10$$

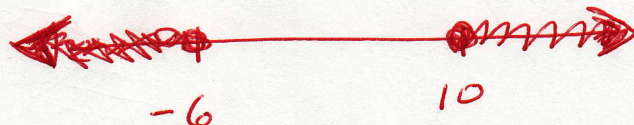
or

$$3x - 6 \leq -24$$

$$3x \leq -18$$

$$x \leq -6$$

or



For #3 and 4, solve each inequality using the sign test. Show your work.

3.

$$3x^3 - 18x \geq 3x^2$$

$$-2 \leq x \leq 0 \text{ or } x \geq 3$$

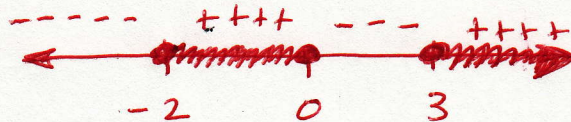
$$3x^3 - 3x^2 - 18x \geq 0$$

$$3x(x^2 - x - 6) \geq 0$$

$$3x(x-3)(x+2) \geq 0$$

$$3x=0 \quad x-3=0 \quad x+2=0$$

$$x=0 \quad x=3 \quad x=-2$$



	$(3x)(x-3)(x+2)$	
-10	$(-)(-)(-)$	-
-1	$(-)(-)(+)$	+
1	$(+)(-)(+)$	-
10	$(+)(+)(+)$	+

4.

$$(x+2)(x-7)(x-1)^2 \geq 0$$

$$x=-2 \quad x=7 \quad x=1$$

$$(x+2)(x-7)(x-1)^2 \geq 0$$

-10	$(-)(-)(+)$	+
0	$(+)(-)(+)$	-
3	$(+)(-)(+)$	-
10	$(+)(+)(+)$	+

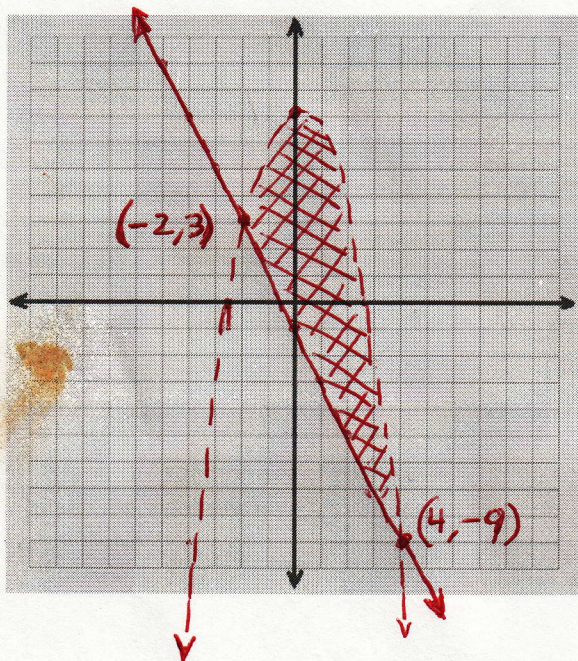


$$x \leq -2 \text{ or } x \geq 7$$

5. Graph the solution set of each system in the coordinate plane and determine the points of intersection algebraically.

$$y < 7 - x^2$$

$$y \geq -2x - 1$$



To determine the points of intersection algebraically, we set the equations equal to each other because this is where they share points.

$$7 - x^2 = -2x - 1$$

$$0 = x^2 - 2x - 8$$

$$0 = (x - 4)(x + 2)$$

$$x = 4 \quad x = -2$$

plug x into either equation to find y :

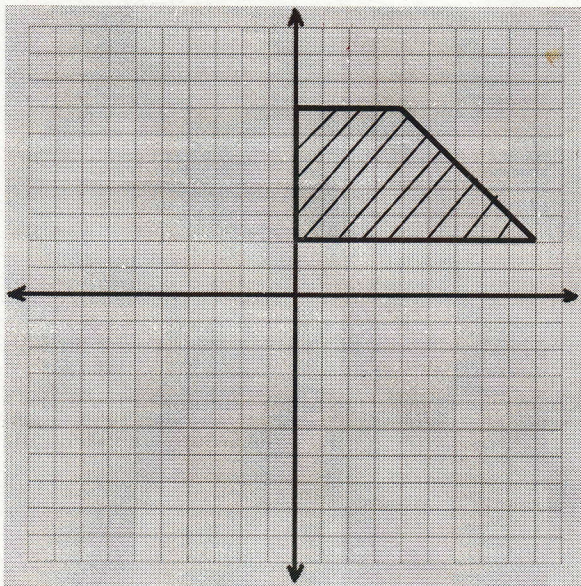
$$y = 7 - 4^2$$

$$(4, -9) \quad y = 7 - 16 = -9$$

$$(-2, 3) \quad y = 7 - (-2)^2$$

$$y = 7 - 4 = 3$$

6. Determine the set of inequalities that define the region.

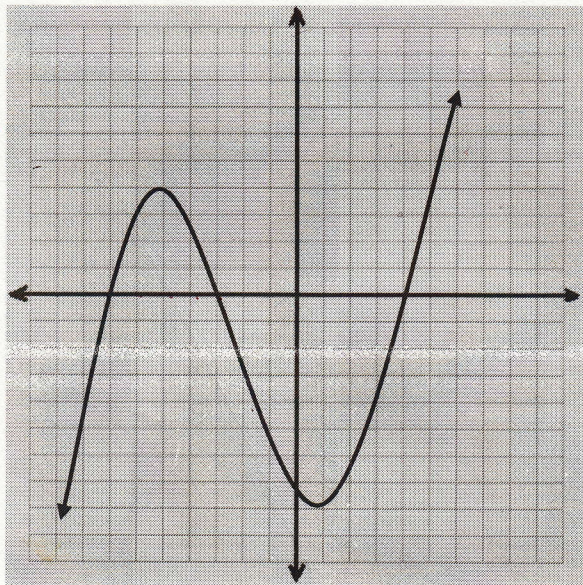


$$x \geq 0$$

$$2 \leq y \leq 7$$

$$y \leq -x + 11$$

7. Given the following function, $f(x)$, for what values is $f(x) > 0$?

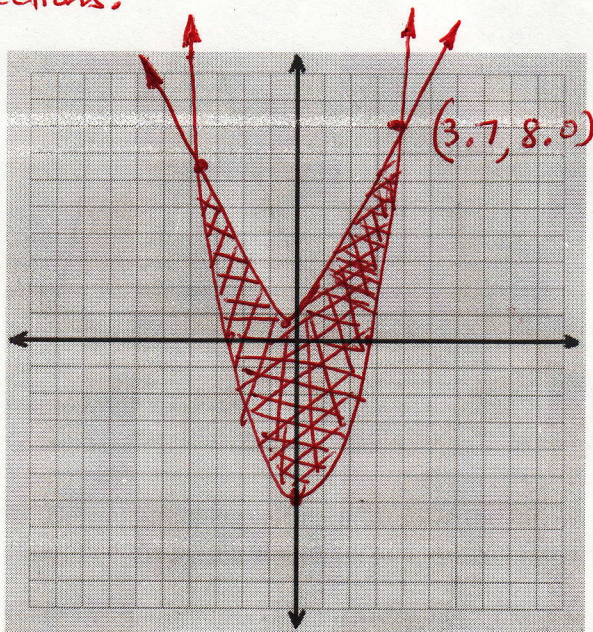


$$\underline{-7 < x < -3 \text{ or } x > 4}$$

8. Use your graphing calculator to solve the following inequality. You may also use your calculator to determine the points of intersection. Answers to the nearest tenth.

$$x^2 - 6 < \sqrt{4x^2 + 2x + 1}$$

READ the directions.



$$(-3.6, 6.7) \quad (3.7, 8.0)$$

$$\underline{-3.6 < x < 3.7}$$