

Trigonometry/PreCalculus Special Topic – Systems of Inequalities

Solution of an Inequality – an ordered pair  $(x,y)$  that makes the inequality true.

Graph of an Inequality – collection of all solutions of the inequality.

Sketch the graph of each inequality.

1.  $-x+2y \geq 4$   
 $y < -x^2 + 3$

2.  $x^2 + y^2 \leq 25$   
 $4x - 3y \leq 0$

3.  $x+y \leq 5$   
 $x \geq 2$

Write a system of inequalities.

Sketch the graph of the inequality.

5.  $x \leq 4$  6.  $y < 3$  7.  $y \geq 2x - 4$  8.  $5x + 3y \leq -15$

Handwritten notes include:  
 $y-3 < -x^2$   
 $-(y-3) > x^2$   
 $v(0,3)$   
 opens down  
 $\pm \frac{x}{2} \mp 1$

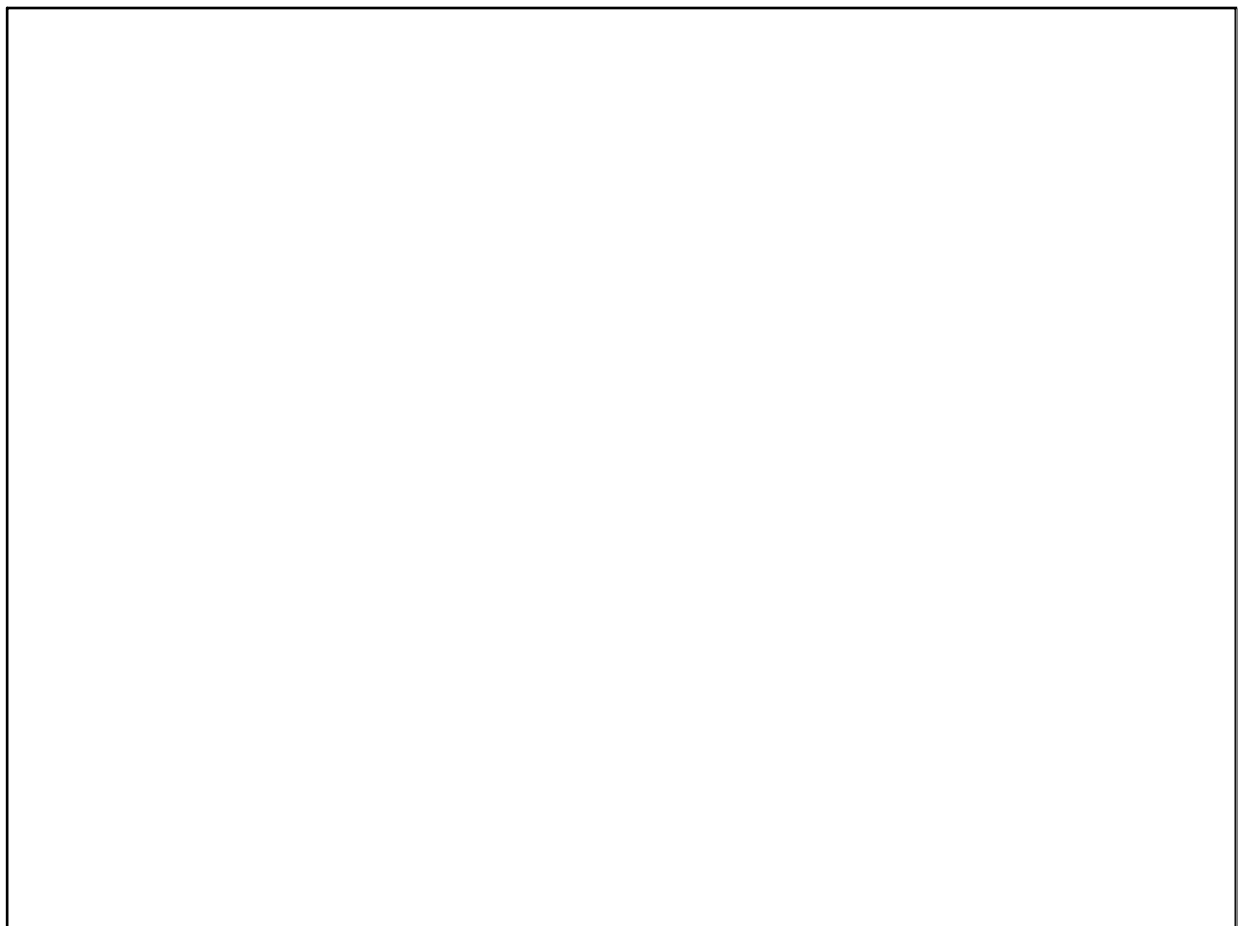
For problem 2:  
 $r(0,5)$   
 $r=5$   
 $4x \leq 3y$   
 $\frac{4}{3}x = y$   
 $m = \frac{4}{3}$   
 $y\text{-int } (0,0)$

For problem 3:  
 $y = -x + 5$   
 $m = -1$   
 $y\text{-int } (0,5)$

For writing a system of inequalities:  
 $(x-h)^2 + (y-k)^2 = r^2$   
 $x^2 + y^2 < 4$   
 $y - y_1 = m(x - x_1)$   
 $y - 0 = -\frac{1}{5}(x - 4)$   
 $y \geq -\frac{1}{5}x + \frac{4}{5}$

For sketching the graph of the inequality:  
 $m = \frac{1}{5}$   
 $(4,0)$

May 13-3:38 PM



May 16-9:32 AM