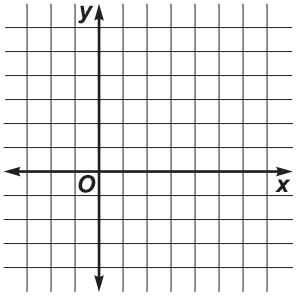
2-6

Practice

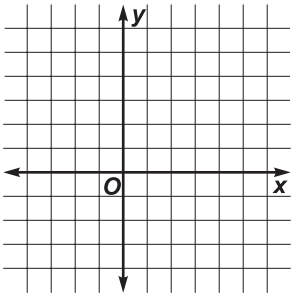
Solving Systems of Linear Inequalities

Solve each system of inequalities by graphing.

1. $-4x + 7y \geq -21; 3x + 7y \leq 28$

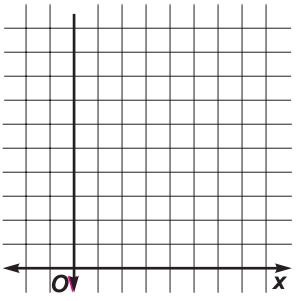


2. $x \leq 3; y \leq 5; x + y \geq 1$

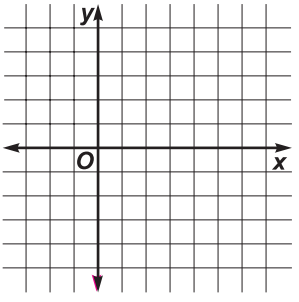


Solve each system of inequalities by graphing. Name the coordinates of the vertices of the polygonal convex set.

3. $x \geq 0; y \geq 0; y \geq x - 4; 7x + 6y \leq 54$

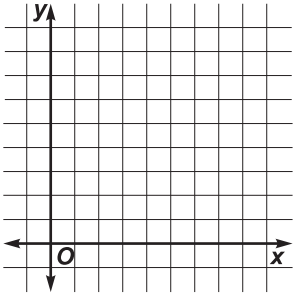


4. $x \geq 0; y + 2 \geq 0; 5x + 6y \leq 18$

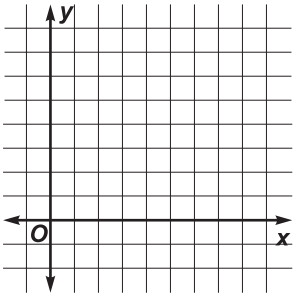


Find the maximum and minimum values of each function for the polygonal convex set determined by the given system of inequalities.

5. $3x - 2y \geq 0 \quad y \geq 0$
$3x + 2y \leq 24 \quad f(x, y) = 7y - 3x$



6. $y \leq -x + 8 \quad 4x - 3y \geq -3$
$x + 8y \geq 8 \quad f(x, y) = 4x - 5y$



7. ***Business*** Henry Jackson, a recent college graduate, plans to start his own business manufacturing bicycle tires. Henry knows that his start-up costs are going to be \$3000 and that each tire will cost him at least \$2 to manufacture. In order to remain competitive, Henry cannot charge more than \$5 per tire. Draw a graph to show when Henry will make a profit.