Questions

1. Graph the region described by $y > 2 - 3x$.
2. Graph the region described by $2x - y \geq 3$.
3. Graph the region described by $y < -\frac{1}{2}x$.
4. Graph the region described by $3x + 4y - 8 \leq 0$. 
Basic Algebra: Graphing Linear Inequalities

Solutions

1. First, sketch \( y = 2 - 3x \), and draw as a dashed line since we don’t have the equality in the inequality.

   You can sketch this using techniques from previous sections (slope and \( y \)-intercept, or getting two points).

   Test Point: \((0, 0)\), colored red in diagram below.

   \[
   y > 2 - 3x \\
   (0) > 2 - 3(0) \\
   0 > 2 \text{ FALSE, so shade side opposite the test point.}
   \]

2. First, sketch \( 2x - y = 3 \), and draw as a solid line since we have the equality in the inequality.

   Test Point: \((0, 0)\), colored red in diagram below.

   \[
   2x - y \geq 3 \\
   2(0) - (0) \geq 3 \\
   0 > 3 \text{ FALSE, so shade side opposite the test point.}
   \]

3. First, sketch \( y = -\frac{1}{2}x \), and draw as a dashed line since we do not have the equality in the inequality.

   Test Point: \((-1, -1)\), colored red in diagram below.

   \[
   y < -\frac{1}{2}x \\
   -1 < -\frac{1}{2}(-1) \\
   -1 < \frac{1}{2} \text{ TRUE, so shade side with the test point.}
   \]

4. First, sketch \( 3x + 4y - 8 = 0 \), and draw as a solid line since we have the equality in the inequality.

   Test Point: \((0, 0)\), colored red in diagram below.

   \[
   3x + 4y - 8 \leq 0 \\
   3(0) + 4(0) - 8 \leq 0 \\
   -8 \leq 0 \text{ TRUE, so shade side with the test point.}
   \]