

1. Solve each inequality. Write your solution in interval notation, then graph it.

a.  $6 - 5x > 9$

b.  $7 + 10x \leq 13x - 8$

c.  $|2x - 3| \geq 15$

d.  $\left| \frac{1}{3}x - 2 \right| < 3$

e.  $5|x - 2| \leq 20$

f.  $3 - |4 - x| < -15$

g.  $\frac{1}{2}|6 - 2x| > 5$

2. Suppose that a farmer has no more than 50 acres for planting alfalfa and soy beans and has a maximum of \$1200 to spend on the planting. It costs \$20 per acre to plant alfalfa and \$30 per acre to plant soy beans. The profit per acre for alfalfa is \$250 and for soy beans is \$300. How much of each crop should the farmer plant? What is the maximum profit?

3. Superbats Inc. manufactures two different types of wood baseball bats: the Homer-Hitter and the Big Timber. The Homer-Hitter takes 8 hours to trim and turn on the lathe and 2 hours to finish. Each Homer-Hitter sold makes a profit of \$17. The Big Timer takes 5 hours to trim and turn on the lathe and 5 hours to finish, and its profit is \$29. The total time available for trimming and lathing is 80 hours and the total available time for finishing is 50 hours. How many of each type should be produced in order to maximize the company's profit? What is the maximum profit?

4. Graph the system of inequalities and find the solution region.

a.  $y > 2x - 3$

b.  $2y < 3x + 4$

$x < y$

a.  $y \leq -\frac{1}{3}x + 4$

b.  $2x + \frac{1}{2}y \leq 7$

c.  $y \leq \frac{1}{2}x + 3$

$x - 3y \geq 4$

5. Given the graph, find the inequalities.

