Math 102
Exam 4
Fall 2010

Name:

1. [10 pts.] Graph the system of linear inequalities and indicate the solution set

$$\begin{cases} x - 3y \leq 3 \\ x + 2y \geq 4 \end{cases}$$

2. [20 pts.] A set of constraints is given below. Draw the graph of the constraints and find the vertices of the feasible region. Determine the maximum possible profit given the profit formula $P = 2.20x + 1.65y$.

$$\begin{cases} 4x + 3y \geq 12 \\ 3x + 4y \leq 36 \\ x \geq 2 \\ y \leq 5 \\ y \geq 1 \end{cases}$$

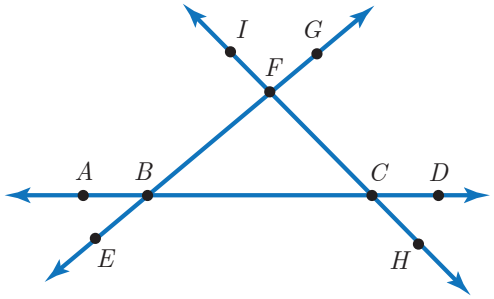
3. The Thompson Company manufactures two industrial products: standard ($45 profit per item) and economy ($30 profit per item). These products are built using machine time and manual labor. The standard product requires 3 hr of machine time and 2 hr of manual labor. The economy model requires 3 hr of machine time and no manual labor. The week's supply of manual labor is limited to 800 hr and machine time to 15,000 hr.

   (a) [10 pts.] List the constraints and determine the objective function.

   (b) [10 pts.] Graph the set of constraints and determine the vertices of the feasible region.

   (c) [10 pts.] How much of each type of product should be produced each week to maximize the profit? What is the maximum profit?

4. [5 pts. each] Use the figure to find each.



   (a) $\measuredangle HCD \cap \measuredangle ACF$

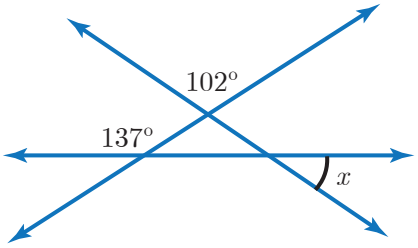
   (b) $\overset{\circ}{\overline{BC}} \cup \overset{\circ}{\overline{CD}}$

   (c) $\overrightarrow{FH} \cup \overrightarrow{CI}$

   (d) $\overline{EB} \cup \overrightarrow{BG}$

5. [10 pts.] If $\measuredangle 1$ and $\measuredangle 2$ are complementary angles and if the measure of $\measuredangle 1$ is four times the measure of $\measuredangle 2$, determine the measures of each angle.

6. [10 pts.] Find the measure of $\measuredangle x$



7. [10 pts.] The figures below are similar. Find the values of x and y.