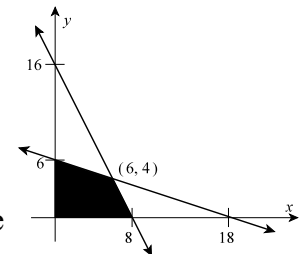
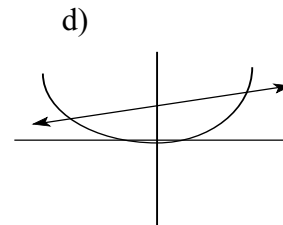
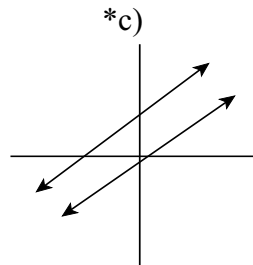
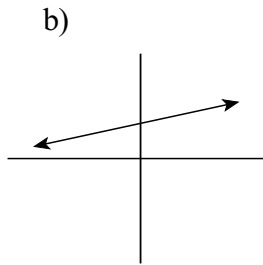
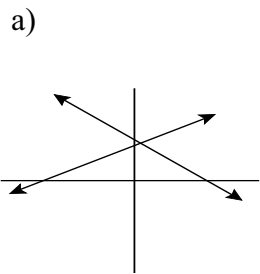


1. The system $\begin{cases} x + 2y = -10 \\ -3x - 6y = 30 \end{cases}$ has
 a) one solution *b) many solutions c) no solution d) two solutions
2. The set of solutions to the system $\begin{cases} x + 2y - z = -3 \\ y + 2z = 1 \\ 4z = -4 \end{cases}$ is
 a) $(-1, -3, -4)$ b) $(-3, 1, -4)$ *c) $(-10, 3, -1)$ d) $(-7, -1, 1)$
3. Solve the system $\begin{cases} x + 2y = 8 \\ 3x - y = -4 \end{cases}$.
 a) $(-1, 0)$ b) $(0, 0)$ c) $(0, -1)$ *d) $(0, 4)$
4. If the augmented matrix of a system consists of a row with entirely zero entries except the entry in the constant column then the system has
 a) one solution b) many solutions *c) no solution d) two solutions
5. The maximum value of the function $P = 2x + 10y$ over the region graphed at the right occurs at the point
 a) $(0, 0)$ b) $(6, 4)$
 *c) $(0, 6)$ d) $(8, 0)$
6. To check to see which half-plane satisfies the inequality $y > 3x + 2$, which of the following points can be used?
 a) $(0, 2)$ b) $(-\frac{2}{3}, 0)$ c) $(1, 5)$ *d) $(2, 4)$
7. $x > 0$ and $y > 0$ decides:
 *a) Quadrant 1 b) Quadrant 2 c) Quadrant 3 d) Quadrant 4
8. Point $(2, 3)$ is in the solution set of
 a) $2x - 3y > 0$ b) $x + y > 5$ *c) $3x - 2y < 5$ d) $5x - 3y \geq 5$
9. The solution of the system with augmented matrix $\begin{bmatrix} 1 & 2 & -3 & 7 \\ 0 & 1 & 2 & 6 \\ 0 & 0 & 0 & 0 \end{bmatrix}$ is
 a) $(5z + 19, 6 - 2z, z)$ *b) $(7z - 5, 6 - 2z, z)$ c) $(1, -2, z)$ d) no solution



10. Which of the following represents an inconsistent system of linear equations?



For the next two problems use the following: A manufacturer makes two types of golf clubs: a starter model and a professional model. The starter model requires 4 hours in the assembly room and 1 hour in the finishing room. The professional model requires 6 hours in the assembly room and 1 hour in the finishing room. The total number of hours available in the assembly room is 108. There are 24 hours available in the finishing room. The profit for each starter model is \$35, and the profit for each professional model is \$55. Assuming all the sets produced can be sold, find how many of each set should be manufactured to maximize profit.

Let x represents the number of starter model and y represents the number of a professional model.

11. List the constraints that must be used in order to solve the problem.

a)
$$\begin{cases} 4x + y \leq 24 \\ 6x + y \leq 108 \\ x \leq 0 \\ y \leq 0 \end{cases}$$

b)
$$\begin{cases} 4x + y \leq 24 \\ 6x + y \leq 108 \\ x \leq 0 \\ y \leq 0 \end{cases}$$

c)
$$\begin{cases} 4x + 6y \leq 24 \\ x + y \leq 35 \\ x \geq 0 \\ y \geq 0 \end{cases}$$

*d)
$$\begin{cases} 4x + 6y \leq 108 \\ x + y \leq 24 \\ x \geq 0 \\ y \geq 0 \end{cases}$$

12. state your objective function.

a) $P = 108x + 24y$

b) $108 = 35x + 55y$

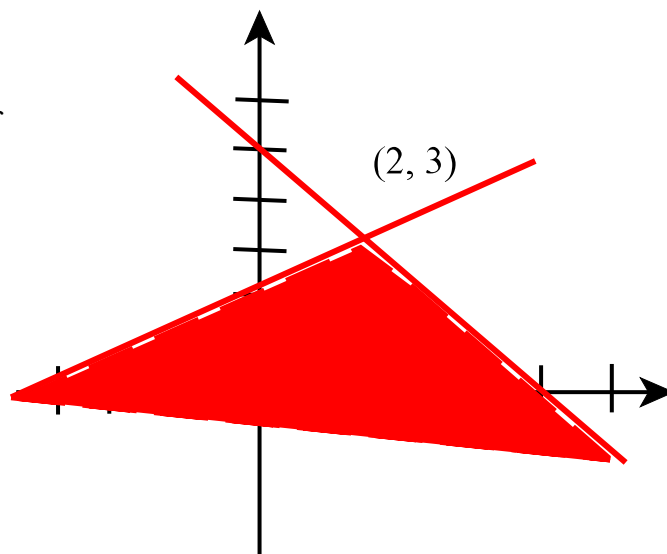
*c) $P = 35x + 55y$

d) $P = 55x + 24y$

Show your work on the next two problems.

13. Sketch the solution set of the following system of linear inequalities, labeling the intersection and intercepts of the boundary lines.

$$\begin{cases} x + y \leq 5 \\ -3x + 7y \leq 15 \end{cases}$$



14. Solve the system of equations using Gaussian elimination:

$$\begin{cases} x + 3y + z = 4 \\ 3x - 3y + 2z = 1 \\ 2x - y + z = 2 \end{cases}$$

$\{(2, 1, -1)\}$

$$\begin{bmatrix} 1 & 3 & 1 & 4 \\ 3 & -3 & 2 & 1 \\ 2 & -1 & 1 & 2 \end{bmatrix} \xrightarrow{-3R_1+R_2} \begin{bmatrix} 1 & 3 & 1 & 4 \\ 0 & -12 & -1 & -11 \\ 2 & -1 & 1 & 2 \end{bmatrix} \xrightarrow{-2R_1+R_3}$$

$$\begin{bmatrix} 1 & 3 & 1 & 4 \\ 0 & -12 & -1 & -11 \\ 0 & -7 & -1 & -6 \end{bmatrix} \xrightarrow{-7R_2+12R_3} \begin{bmatrix} 1 & 3 & 1 & 4 \\ 0 & -12 & -1 & -11 \\ 0 & 0 & -5 & 5 \end{bmatrix}$$

$$\boxed{z = -1}, -12y + 1 = -11, \boxed{y = 1}$$

$$x + 3(1) + (-1) = 4, \boxed{x = 2}$$