

8, 16, 17, 18 w/ EC.

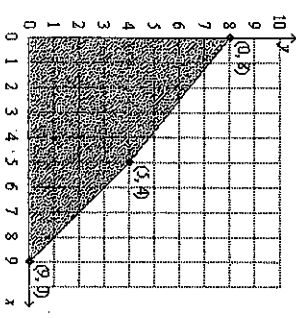
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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_ ID: A

**Linear Programming review**

**Multiple Choice**  
Identify the choice that best completes the statement or answers the question.

**C** 1. Find the values of  $x$  and  $y$  that maximize the objective function  $P = 3x + 2y$  for the graph. What is the maximum value?

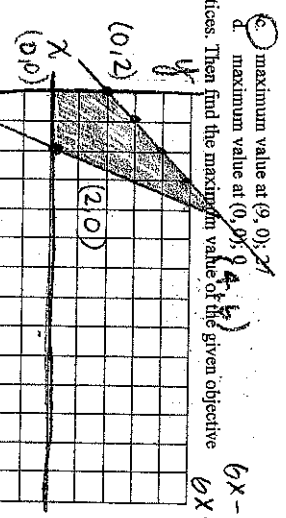


$P = 3(0) + 2(8) = 16$   
 $P = 3(5) + 2(4) = 23$   
 $P = 3(9) + 2(0) = 27$

- a. maximum value at (5, 4); 32  
 b. maximum value at (0, 8); 16  
 c. maximum value at (9, 0); 27  
 d. maximum value at (0, 0); 0

**D** 2. Given the system of constraints, name all vertices. Then find the maximum value of the given objective function.

$x \geq 0$   
 $y \geq 0$   
 $6x - 2y \leq 12$   
 $4y \leq 4x + 8$



Maximum for  $C = 4x - 3y$

- a. (0, 0), (0, 2), (2, 0), (4, 0); maximum value of -6  
 b. (0, 0), (0, 2), (2, 0), (4, 0); maximum value of 12  
 c. (0, 0), (0, 2), (2, 0), (4, 0); maximum value of 10  
 d. (0, 0), (0, 2), (2, 0), (4, 0); maximum value of 8

**A** 3. Your computer supply store sells two types of inkjet printers. The first, type A, costs \$137 and you make a \$50 profit on each one. The second, type B, costs \$100 and you make a \$40 profit on each one. You can order no more than 100 printers this month, and you need to make at least \$4400 profit on them. If you must order at least one of each type of printer, how many of each type of printer should you order if you want to minimize your cost?

- a. 40 of type A  
 b. 30 of type A  
 c. 60 of type A  
 d. 70 of type A

$C = 137A + 100B$   
 $4400 \leq 50A + 40B$   
 $100 \geq A + B$

plug in answers

$4400 \leq 50(40) + 40(60)$   
 $4400 \leq 3000 + 2400$   
 $4400 \leq 50(30) + 40(70)$  NOT enough  
 $4300 \leq 1500 + 2800$  profit

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**Acc Algebra II - Matrix Assessment - REVIEW**

**Short Answer**

Identify the given matrix element.

1.  $a_{2,3}$

-1	2	5	0
-5	0	8	7
9	2	-6	-1
8	-5	0	-7

8

$X = \begin{bmatrix} 6 & 30 \\ 2 & 9 \end{bmatrix}$

$\begin{bmatrix} 7 & -3 \\ 2 & -1 \end{bmatrix} \begin{bmatrix} 0 & 3 \\ -2 & -3 \end{bmatrix}$

$\frac{1}{-1} \begin{bmatrix} -7 & 3 \\ -2 & 1 \end{bmatrix} = \begin{bmatrix} 7 & -3 \\ 2 & -1 \end{bmatrix}$

2. State the dimensions of the matrix. Identify the indicated element.

$A = \begin{bmatrix} -9 & 4 \\ -8 & 5 \\ 0 & 8 \end{bmatrix}$

$3 \times 2, -8$

$6x - 2(x + 2) = 12$

$6x - 2x - 4 = 12$

$4x = 16$

$x = 4$

$y = 4 + 2$

$y = 6$

3. B-A can't, different dimensions  
 Find the values of the variables.

$\begin{bmatrix} -6 & -1 & 0 \\ 8 & -2 \end{bmatrix} = \begin{bmatrix} -5 & 0 \\ 8 & -2y + 2 \end{bmatrix}$

$-6 - t = -5$   
 $-t = 1$   
 $t = -1$   
 $-2 = -2y + 2$   
 $-4 = -2y$   
 $2 = y$

$C = 4(4) - 3(6)$

$16 - 18$

$C = 4(2) - 3(0)$

$C = 8$

$x + \begin{bmatrix} 2 & 7 & 8 \\ 0 & 3 & 0 \end{bmatrix} = \begin{bmatrix} 6 & -1 & 8 \\ -5 & 2 & 6 \end{bmatrix} + \begin{bmatrix} -2 & -7 & -8 \\ 0 & -3 & 0 \end{bmatrix} = \begin{bmatrix} 4 & -8 & 0 \\ -5 & -1 & 6 \end{bmatrix}$   
 $x = \begin{bmatrix} 6 & 30 \\ 2 & 9 \end{bmatrix}$   
 $4400 \leq 50(60) + 40(40)$   
 $4400 \leq 3000 + 1600$   
 $4400 \leq 50(70) + 40(35)$   
 $4400 \leq 3500 + 1400$

$$8. \begin{bmatrix} 4 & 1 & 0 \\ 9 & 2 & 1 \\ -4 & -1 & -1 \end{bmatrix} X = \begin{bmatrix} -3 \\ -4 \\ -2 \end{bmatrix}$$

$$X = \begin{bmatrix} -3 \\ 9 \\ 5 \end{bmatrix}$$

Find the product.

$$9. \begin{bmatrix} 7 & -4 & 0 \\ -9 & -3 & 0 \\ 6 & 2 & 1 \end{bmatrix}$$

$$\begin{bmatrix} -63 & 36 & 0 \\ 27 & 0 & -45 \\ -54 & -18 & -9 \end{bmatrix}$$

$$10. \begin{bmatrix} -3 & -7 & -8 \\ 2 & & -9 \end{bmatrix}$$

$$-15 - 14 + 72 \quad [43]$$

11. Find  $-3A - 2B$ .

$$A = \begin{bmatrix} 1 & -1 \\ 0 & -3 \\ 5 & 2 \end{bmatrix}$$

$$B = \begin{bmatrix} -2 & 1 \\ 5 & 4 \\ 0 & -7 \end{bmatrix}$$

$$\begin{bmatrix} -3 & 3 \\ 0 & 9 \\ -15 & -6 \end{bmatrix} + \begin{bmatrix} 4 & -2 \\ -10 & -8 \\ 0 & 14 \end{bmatrix} = \begin{bmatrix} 1 & 1 \\ -10 & 1 \\ -15 & 8 \end{bmatrix}$$

Determine whether the matrix has an inverse. If an inverse exists, find it.

$$12. \begin{bmatrix} 9 & -13 \\ 2 & -3 \end{bmatrix}$$

$$-27 - (-26) = -1 \quad \frac{1}{-1} \begin{bmatrix} -3 & 13 \\ 2 & 9 \end{bmatrix} = \begin{bmatrix} 3 & -13 \\ 2 & -9 \end{bmatrix}$$

$$13. \begin{bmatrix} 0.5 & -2.5 \\ 0 & 1 \end{bmatrix}$$

$$.5 - 0 = .5 \quad \frac{1}{.5} = 2 \quad \begin{bmatrix} 1 & 2.5 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 2 & 5 \\ 0 & 1 \end{bmatrix}$$

Evaluate the determinant.

$$14. \begin{vmatrix} 2 & 11 \\ 7 & 2 \end{vmatrix}$$

$$4 - 77 = -73$$

15.

~~$$\begin{vmatrix} -3 & -1 & 3 & -1 \\ -2 & -5 & 7 & -5 \\ 5 & 8 & -7 & 3 \end{vmatrix}$$~~

$$((75 + (-15)(-30)) - (125(-27) - (-10)))$$

$$-90 - 88$$

$$-178$$

Solve the system.

$$W = -4 \quad X = -3 \quad Y = -3 \quad Z = -1$$

$$16. \begin{cases} -2w - 3x - 3y = 26 \\ 3w - 2x + 3y - 3z = 12 \\ -w - 3x - 2y - 3z = 22 \\ w - x - 2y - 3z = 8 \end{cases}$$

$$\begin{bmatrix} -2 & -3 & -3 & 0 \\ -3 & -2 & 3 & -3 \\ -1 & -3 & -2 & -3 \\ 1 & -1 & -2 & -3 \end{bmatrix} \begin{bmatrix} W \\ X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} 26 \\ 12 \\ 22 \\ 8 \end{bmatrix}$$

$$17. \begin{cases} -5x + 6y = 1 \\ x - y = 2 \end{cases}$$

$$\begin{bmatrix} -5 & 6 \\ 1 & -1 \end{bmatrix} \begin{bmatrix} X \\ Y \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

$$(13, 11)$$

18. A gem store sells beads made of amber and quartz. For 1 amber bead and 3 quartz beads, the cost is \$12.75. For 3 amber beads and 1 quartz bead, the cost is \$26.25. Find the price of each type of bead.

$$\begin{bmatrix} 1 & 3 \\ 3 & 1 \end{bmatrix} \begin{bmatrix} X \\ Y \end{bmatrix} = \begin{bmatrix} 12.75 \\ 26.25 \end{bmatrix}$$

$$(\$48.25, \$1.50)$$