

There are financial formulas on the last page. \_\_\_\_\_

1. What is the point of intersection of  $y = 63$  and  $2x - 3y = 15$ ?
  - (a) (102, 63)
  - (b) (63, 102)
  - (c) (37, 63)
  - (d) (63, 37)
  - (e) (0, 0)
2. Which of the following statements about the line  $y = 7x - 21$  is **FALSE**.
  - (a) The line has  $y$ -intercept  $y = -21$ .
  - (b) The line has  $x$ -intercept  $x = 3$ .
  - (c) The line intersects  $y = 3x - 9$  at the point (3, 0).
  - (d) The line does not intersect the second line  $y = 7x - 2$ .
  - (e) The line is parallel to  $y = 2x - 7$ .
3. A bounded region in the plane has four straight sides and the coordinates of the corners of the region are (1, 2), (5, 8), (3, 7) and (6, 2). What is the maximum of the function  $G = 2x - y$  over this region?
  - (a) -1
  - (b) 0
  - (c) 2
  - (d) 10
  - (e) No maximum.

4. Consider the following system of inequalities:

$$\begin{cases} 2x + y \geq 8 \\ 3x + y \leq 9 \\ x \geq 1 \\ y \geq 0 \end{cases}$$

Which of the following points is NOT a *corner* of the region defined by this set?

- (a) (1,0)
  - (b) (4,0)
  - (c) (1,6)
  - (d) (1,9)
  - (e) all are corners of the region
5. An antenna is secured on the west side by two parallel guide wires. The longest wire is 84 feet and it is attached to the antenna 56 feet above the ground. The shorter wire is attached to the antenna 24 feet above the ground. How long is the shorter guide wire?
    - (a) 24 feet
    - (b) 28 feet
    - (c) 32 feet
    - (d) 36 feet
    - (e) 42 feet

6. Consider the following situation.

A warehouse measures 100' by 100'. The owner wishes to extend the warehouse on the east and north sides to obtain a new warehouse with 23,000 square feet of floor space. The owner also wishes that the extension be twice as long on the east side as it is on the north.

The distance that the building should be extended, to the north, is a root of which of the following equations?

- (a)  $x^2 + 300x + 13000 = 0$                       (d)  $2x^2 + 300x - 10000 = 0$   
(b)  $x^2 + 300x - 13000 = 0$                       (e)  $3x^2 + 300x - 13000 = 0$   
(c)  $2x^2 + 300x - 13000 = 0$

7. Which of the following statements concerning quadratics and their graphs (parabolas) is false?

- (a) If a quadratic has no roots then its graph does not cross the  $x$ -axis.  
(b) A quadratic can have 0, 1 or 2 roots.  
(c) The Pythagorean theorem is used to find the roots a quadratic equation.  
(d) It is possible to tell if the graph of  $y = Ax^2 + Bx + C$  opens upward or downward from the sign of  $A$ .  
(e) If we know the factors of a quadratic equation, then we can find the roots easily.

8. Which of the following general statements about lines in the  $x - y$  plane is FALSE.

- (a) If a line is vertical then its equation will not have a  $y$  in it.  
(b) If two lines have two points of intersection, then they are the same line.  
(c) The line  $y = mx + b$  passes through the point  $(0, b)$ .  
(d) The slope of the line through  $(-1, 4)$  and  $(-2, 3)$  is  $-1$ .  
(e) Two equations of the form  $Ax + By = C$ , with different  $A$ ,  $B$  and  $C$ 's may actually be equations of the same line.

9. Which of the following lines are parallel?

(A)  $3x - 6y = 15$

(B)  $2y = x + 5$

(C)  $y = \frac{1}{2}x$

- (a) A and B only.  
(b) A and C only.  
(c) B and C only.  
(d) all of them are parallel.  
(e) no pair is parallel.

10. Find a positive root of  $4x^2 - 2x - 5 = 0$ .

- (a) 0    (d) 0.9  
(b) 1.4    (e)  $-0.9$   
(c)  $-1.4$





Monthly Savings Formula:

$$D = \frac{12}{i} \left[ \left( 1 + \frac{i}{12} \right)^k - 1 \right] M$$