

Name \_\_\_\_\_

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

- 1) Let  $\mathbf{A} = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ ; find  $\mathbf{A}^{-1}$ . 1) \_\_\_\_\_
  
- 2) (a) If  $\mathbf{A}$  is the coefficient matrix of the system  $\begin{cases} x + 3y = 2 \\ x + 2y = 5 \end{cases}$ , determine  $\mathbf{A}^{-1}$ . 2) \_\_\_\_\_  
 (b) Use  $\mathbf{A}^{-1}$  to solve the system.
  
- 3) Look at the equations  $\begin{cases} 2x + y = 5 \\ 7x + 4y = 7 \end{cases}$  3) \_\_\_\_\_  
 (a) Set up these equations in the matrix form  $\mathbf{Ax} = \mathbf{b}$   
 (b) Find  $\mathbf{A}^{-1}$   
 (c) Using  $\mathbf{A}^{-1}$ , solve the equations.
  
- 4) 4) \_\_\_\_\_  
 Let  $\mathbf{A} = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -3 & -6 & -10 \end{bmatrix}$ . Find  $\mathbf{A}^{-1}$ .
  
- 5) A group of investors has \$500,000 to invest in the stocks of three companies. Company A sells for \$50 a share and has an expected growth of 13% per year. Company B sells for \$20 per share and has an expected growth of 15% per year. Company C sells for \$80 a share and has an expected growth of 10% per year. 5) \_\_\_\_\_  
 The group decides to try a new investment strategy which entails buying equal amounts of shares in Company B and Company C, and having a goal of 11.4% growth per year. How many shares of each stock should they buy?

## Answer Key

Testname: MATRICES-INVERSES

$$1) \mathbf{A}^{-1} = \begin{bmatrix} -2 & 1 \\ \left(\frac{3}{2}\right) & -\left(\frac{1}{2}\right) \end{bmatrix}$$

$$2) (a) \begin{bmatrix} -2 & 3 \\ 1 & -1 \end{bmatrix}$$

$$(b) x = 11, y = -3$$

$$3) (a) \begin{bmatrix} 2 & 1 \\ 7 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5 \\ 7 \end{bmatrix}$$

$$(b) \begin{bmatrix} 4 & -1 \\ -7 & 2 \end{bmatrix}$$

$$(c) x = 13, y = -21$$

$$4) \mathbf{A}^{-1} = \begin{bmatrix} 8 & -2 & 1 \\ 1 & 1 & 1 \\ -3 & 0 & -1 \end{bmatrix}$$

$$5) A: 2000 \text{ shares}; B: 4000 \text{ shares}; C: 4000 \text{ shares}$$