

DO NOT TURN THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO

- ❖ Write your name below on the space provided.
- ❖ This test has a total of 6 pages.
- ❖ Work the problem in the space provided. If you need more space, write on the back of the test.
- ❖ To insure maximum credit, show your work. In general, full credit will not be given for unsupported answers.
- ❖ Look only at your test. Don't give me the impression that you are cheating.
- ❖ Be sure to write neatly. If I cannot read what was written, do not expect the problem to be graded.
- ❖ If you finish early, go over the test again.

Good luck!

Number	Maximum	Score
1	6	
2	20	
3	6	
4	12	
5	12	
6	16	
7	1	
8	5	
9	9	
10	4	
11	9	
Total	100	

Name _____

Circle Final Answers

1) (3 points each) Find the equation of the line in slope-intercept form that...

a) Passes through the points $(5,8)$ and $(12,6)$:

b) Is through the point $(-1,3)$ and is perpendicular to the line $2x + 3y = 15$:

2) (4 points each) Suppose that the price and demand for a gallon of Tuscan Milk was given by $p = D(q) = 74 - 0.26q$ and the price and supply was given by $p = S(q) = 0.48q$ where p is price in dollars and q is the demand in hundreds of three-wheeler.

a) Find and interpret, using the language of the problem, the following:

i) $D(45)$

ii) $S(105)$

b) Find the demand when the price is \$61:

c) Find the supply when the price is \$60:

d) Find the equilibrium quantity and equilibrium price:

6) (8 points each) Solve the system $\begin{cases} 4x - 2y = 14 \\ x + 5y = -13 \end{cases}$ using the methods listed below. Write answer as an ordered triple.

a) The Echelon (Elimination) method:

b) Gauss-Jordan method:

7) (1 point) Verify that you made absolutely sure that your answer to 6a is the same as in 6b by signing your name here _____. You will not receive the credit if the work does not support the same answer.

8) For the following problem:

A person invested \$4,200 for one year, part at 8%, part at 10%, and the remainder at 12%. The total annual return was \$716. The total amount of money invested in the 12% was \$300 more than the amounts invested at 8% and 10% combined. How much was invested at each rate?

a) (2 points) Name and define your variables for this problem:

b) (3 points) Set up **BUT DO NOT SOLVE** a system of equations for this problem:

9) (3 points each) For the following matrices:

$$A = \begin{bmatrix} 5 & -2 \\ 9 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} 6 & -2 & 4 \\ 1 & 12 & 1 \end{bmatrix}$$

$$C = \begin{bmatrix} 6 & 1 \\ -4 & -2 \end{bmatrix}$$

$$D = \begin{bmatrix} -2 & 8 \\ 5 & 12 \\ 3 & 4 \end{bmatrix}$$

Find the following or explain why they do not exist:

a) $4A - 5C$

b) $6B + D$

c) BD

10) (2 points each) What property must be true to...

a) Add or subtract matrices?

b) Multiply matrices?

11) (6 points part *a*; 3 points part *b*) For the system
$$\begin{cases} 3x - y = 2 \\ x - 2y + 2z = -2 \dots \\ 2x - 3y + 3z = -1 \end{cases}$$

a) Find the inverse of the coefficient matrix algebraically using the Gauss-Jordan Method:

b) Solve the system using the matrix inverse from part *a*: