

MATH 106 QUIZ 2 – MULTIPLE CHOICE PORTION

February-March, 2009

MULTIPLE CHOICE (35 points total, 5 points per problem). For problems #1-7, choose the best answer. **Record your choices on the answer sheet provided with the short answer quiz document. You are NOT required to show work for the multiple choice problems.**

1. (5 pts) The result of performing the elementary row operation $[3] + (5)[2]$ 1. _____

on the system
$$\left[\begin{array}{ccc|c} 1 & 0 & 3 & 9 \\ 0 & 1 & -3 & 2 \\ 0 & -5 & 4 & 1 \end{array} \right]$$
 is

A. $\left[\begin{array}{ccc|c} 1 & 0 & 3 & 9 \\ 0 & 1 & -3 & 2 \\ 0 & 0 & -11 & 11 \end{array} \right]$ B. $\left[\begin{array}{ccc|c} 1 & 0 & 3 & 9 \\ 0 & 1 & -3 & 2 \\ 0 & 0 & 4 & 1 \end{array} \right]$ C. $\left[\begin{array}{ccc|c} 1 & 0 & 3 & 9 \\ 0 & 1 & -3 & 2 \\ 10 & 5 & 14 & 11 \end{array} \right]$ D. $\left[\begin{array}{ccc|c} 1 & 0 & 3 & 9 \\ 0 & -5 & -11 & 11 \\ 0 & -5 & 4 & 1 \end{array} \right]$

2. (5 pts) When solving a system of linear equations with the unknowns $x, y,$ and z 2. _____
using the Gaussian elimination method, the following augmented matrix was obtained.

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & 3 \\ 0 & 1 & 2 & 4 \\ 0 & 0 & 0 & 1 \end{array} \right]$$
 What can be concluded about the solution of the system?

- A. There is exactly one solution.
- B. There are no solutions.
- C. There are infinitely many solutions.
- D. The number of solutions cannot be determined.

3. (5 pts) Calculate the matrix subtraction. $\begin{bmatrix} -1 & 6 \\ 0 & 2 \end{bmatrix} - \begin{bmatrix} -1 & 3 \\ 6 & 1 \end{bmatrix}$ 3. _____

A. $\begin{bmatrix} 0 & 3 \\ -6 & 1 \end{bmatrix}$ B. $\begin{bmatrix} 0 & -3 \\ 6 & -1 \end{bmatrix}$ C. $\begin{bmatrix} 3 \\ -5 \end{bmatrix}$ D. $\begin{bmatrix} -2 & 9 \\ 6 & 3 \end{bmatrix}$

4. (5 pts) Find the matrix product $\begin{bmatrix} 2 & 1 \\ -1 & 0 \end{bmatrix} \begin{bmatrix} 5 & 4 & 0 \\ -6 & 1 & 7 \end{bmatrix}$ 4. _____

A. $\begin{bmatrix} 10 & 4 \\ 6 & 0 \end{bmatrix}$

B. $\begin{bmatrix} 10 & 8 & 0 \\ 6 & -1 & 7 \end{bmatrix}$

C. $\begin{bmatrix} 4 & 9 & 7 \\ -5 & -4 & 0 \end{bmatrix}$

D. $\begin{bmatrix} 16 & 7 & -7 \\ 5 & 4 & 0 \end{bmatrix}$

(Coffee Merchant) A coffee merchant sells two blends of coffee.

For each pound of Blend A, 80% is Mocha Java and 20% is Jamaican, and Blend A sells for \$2.10 a pound.

For each pound of Blend B, 30% is Mocha Java and 70% is Jamaican, and Blend B sells for \$2.85 a pound.

The merchant has available 1000 pounds of Mocha Java and 600 pounds of Jamaican.

The merchant will try to sell the amount of each blend that maximizes her income.

Let x be the number of pounds of Blend A and let y be the number of pounds of Blend B.

5. (5 pts) For the Coffee Merchant situation described above, state the objective function. 5. _____

A. $1000x + 600y$

B. $0.30x + 2.10y$

C. $0.80x + 0.20y$

D. $2.10x + 2.85y$

6. (5 pts) For the Coffee Merchant situation described above, determine which of the following inequalities must be satisfied, regarding Mocha Java. 6. _____

A. $0.80x + 0.20y \leq 1000$

B. $0.80x + 0.30y \leq 1000$

C. $0.30x + 0.70y \geq 1000$

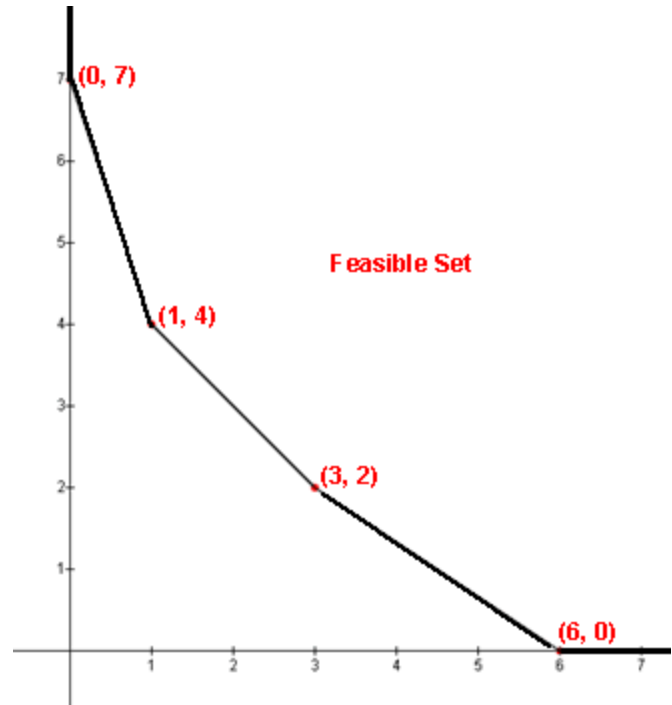
D. $0.80x + 0.30y \geq 1000$

7. (5 pts)

7. _____

Given the feasible set shown to the right, find the values of x and y that **minimize** the objective function $5x + 6y$.

- A. $(x, y) = (0, 7)$
- B. $(x, y) = (1, 4)$
- C. $(x, y) = (3, 2)$
- D. $(x, y) = (6, 0)$



End of the multiple choice portion. Go to the short answer document to record your answer choices for submission.