Mathematics 2204
Chapter 1 – Part 2 Review Due: Tues. Nov. 1st TEST: Thursday. Nov 3rd

Part I:

1. What is the least number of equations needed to solve a system of equations containing four unknowns?

(A) 2 (B) 3 (C) 4 (D) 5

2. Bestel, a local phone company, charges 10¢ per minute for calls to Canada, 20¢ per minute for calls to the U.S., and 30¢ per minute for calls to Mexico. If c represents the number of minutes used for calls to Canada, u represents the number of minutes used for calls to the U.S., and m represents the number of minutes used for calls to Mexico, which equation represents the total cost, b, in dollars, of the total monthly phone bill?

(A) $b = 0.10c + 0.20u + 0.30m$
(B) $b = 0.20c + 0.30u + 0.10m$
(C) $b = 10c + 20u + 30m$
(D) $b = 10c + 0.20u + 0.30m$

3. What is the solution to the following system?

(A) 6, 4, -1
(B) 6, 1, 4
(C) 4, -6, -1
(D) 4, 1, -6

$$\begin{aligned} 2x + y - z &= 3 \\ x + y &= -2 \\ x &= 4 \end{aligned}$$

4. Which of the following is an identity matrix?

(A) $\begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ (C) $\begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 0 \\ 1 & 0 & 0 \end{bmatrix}$

(B) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ (D) $\begin{bmatrix} 0 & 0 & 1 \\ 0 & 0 & 1 \\ 0 & 0 & 1 \end{bmatrix}$

5. Which of the following system of equations has (-1, 1) as a solution?

A) $\begin{aligned} 5x + 6y &= 1 \\ 6x + 2y &= -3 \end{aligned}$ B) $\begin{aligned} 3x + 4y &= 1 \\ 5x - 3y &= -8 \end{aligned}$

C) $\begin{aligned} 3x - 4y &= -6 \\ 3x + 3y &= 1 \end{aligned}$ D) $\begin{aligned} 7x - 3y &= 10 \\ 6x + 5y &= -1 \end{aligned}$

6. What is the solution for the system of equations below ?

A) 3, 5, -6
B) 3, 5, 6
C) 6, -5, 3
D) 6, 5, 3

$$\begin{aligned} -2y + z &= 13 \\ 2x &= 12 \\ 3x + y &= 13 \end{aligned}$$

7. What is the coefficient matrix for the system of equations below?

$$2x-3y+4z=7$$
$$3x+y=4$$
$$3y-5z=8$$

A) $\begin{bmatrix} 2 & -3 & 4 \\ 3 & 1 & 4 \\ 3 & -5 & 8 \end{bmatrix}$

C) $\begin{bmatrix} 2 & -3 & 4 \\ 3 & 1 & 0 \\ 3 & -5 & 0 \end{bmatrix}$

B) $\begin{bmatrix} 2 & 3 & 3 \\ -3 & 1 & -5 \\ 7 & 4 & 8 \end{bmatrix}$

D) $\begin{bmatrix} 2 & -3 & 4 \\ 3 & 1 & 0 \\ 0 & 3 & -5 \end{bmatrix}$

8. George is on top of a building and throws a ball which takes a parabolic path defined by the equation $h=-2.5t^2+8.5t+c$ where t is time, in seconds, and h is the height, in metres, of the ball above the ground. If the balls lands after 4 seconds, what is the value of c?

A) -6
B) 0
C) 4
D) 6

Part II:

1. Solve, algebraically:

a) $2x - 3y + z = -9$, $2x - 4y + 3z = -16$, $4x + y - 3z = 13$

b. $x + 4y + z = 11$, $3x + 4y = 7$, $5x + 2y + 2z = 19$

c. $3x + 2y + 2z = 29$, $9x + 8y + 9z = 116$, $x + 2y + 9z = 86$

2. Find a quadratic function $f(x) = ax^2 + bx + c$ the graph of which passes through the points: (-1, 3), (1, 1), and (2, 6).

3. Albert, Beth, and Cathy can fold 460 napkins in an hour. Albert and Cathy can fold 247 in an hour. Cathy and Beth can fold 310 in an hour. How many napkins can each person fold individually in an hour?

4. John bought 3 types of donuts; apple, blueberry, and chocolate. He bought one for every person in a class of 30 people. John realized that most people like chocolate, so he bought as many chocolate as the other two types combined. Apple donuts cost 45¢ apiece, blueberry cost 48¢ apiece and chocolate cost 50¢ apiece. John spent a total of $14.46. How many of each type did he buy?

5. In triangle XYZ, angle Y is $11\frac{1}{4}$ less than twice angle Z. Angle Y is $23\frac{1}{4}$ less than three times. What are the measures of the three angles?

6. An arrow is fired into the air. After 2 seconds, the arrow is 9 metres in the air. After 4 seconds, the arrow is 13 metres in the air and after 10 seconds, the arrow is 1 meter in the air. Set up and solve a system of equations to determine the quadratic relation, of the form , that models this situation. Use this relation to determine the height of the arrow at $t = 7$ seconds.