

# HOMEWORK 7 - MATH 111

DUE DATE: Friday, March 21

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Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Find the present value of the future amount \$10,000 compounded semi-annually at 6% for 5 years.
2. Find the sum of the first five terms of the geometric sequence with first term  $a = 3$  and common ratio  $r = 2$ .
3. Solve the systems

$$\left\{ \begin{array}{l} 3x + 5y = 7 \\ -x + 2y = 5 \end{array} \right\}, \quad \left\{ \begin{array}{l} -2x + 3y = 1 \\ 8x - 12y = -4 \end{array} \right\},$$

by the substitution method.

4. Solve the system  $\left\{ \begin{array}{l} x - 2y + z = 11 \\ -x + 2y + z = -3 \\ 2x - 3y + 2z = 20 \end{array} \right\}$  by using allowable operations on the equations (Gauss elimination).

5. Solve the system  $\left\{ \begin{array}{l} x + y + z = 4 \\ -x - 2y + 3z = 9 \\ 2x + y - 2z = -3 \end{array} \right\}$  by using the Gauss-Jordan method (matrix row operations).

6. Solve the system  $\left\{ \begin{array}{l} x + 2y - z = 1 \\ -3x - y + z = -13 \\ 2x + 4y - 2z = 2 \end{array} \right\}$  by using the Gauss-Jordan method (matrix row operations).

7. Let  $A = \begin{bmatrix} -1 & -2 \\ 5 & -1 \end{bmatrix}$  and  $B = \begin{bmatrix} 3 & -7 \\ -8 & 2 \end{bmatrix}$ . Compute  $A + B$ ,  $A - B$  and  $3A - 2B$ .

8. Let  $A = \begin{bmatrix} 1 & 0 & 3 \\ -1 & -3 & 7 \end{bmatrix}$  and  $B = \begin{bmatrix} -1 & 2 & -7 \\ 3 & 2 & 10 \end{bmatrix}$ . Compute  $A - B$  and  $-2A + 5B$ .