

1. (6pts) Solve the system of the equation (You can either use calculator or solve algebraically).

$$\begin{cases} 3x + y = 2 \\ x^3 - 2 + y = 0 \end{cases}$$

2. (1) (6pts) Solve the following system of equation.
(2) (3pts) Determine if this system is independent, dependent or inconsistent.

$$\begin{cases} 2x - 4y = -2 \\ -3x + 6y = -5 \end{cases}$$

3. Consider a person who invests in AAA-rated dubs, A-rated bonds, and B-rated bonds. The average yields are 5.5% on AAA bonds, 7% on A bonds and 8% on B bonds. The person invests three times as much in B bonds as in A bonds. The total investment is \$17,000 and annual Return is \$950.

- (1) (4pts) Set up the system of linear equations

- (2) (4pts) Find the amount invested in each type of bonds.

4. The **reduced row echelon form** of the augmented matrix of a system of equation is given.

(1) (6pts) Find the solutions of the system in forms of (x, y, z, w) .

(2) (3pts) Determine if the system is independent, dependent or inconsistent.

$$\begin{bmatrix} 1 & 0 & 0 & -\frac{3}{2} & 1 \\ 0 & 1 & 0 & -\frac{1}{2} & 3 \\ 0 & 0 & 1 & 5 & 0 \end{bmatrix}$$

5. (6pts) Find the corresponding matrix of the given system. Do not solve the system.

$$\begin{cases} -y + 4z = 8 - 3x \\ 2x - 9z = 6y + 1 \\ x + 5y - 7z = 0 \end{cases}$$

6. (1) (8pts) Solve the system by Gaussian Elimination method **without using calculator** (Show work).

$$\begin{cases} 2x + 3y + z = 9 \\ 4x + y - 3z = -7 \\ 6x + y - 4z = -8 \end{cases}$$

- (2) (4pts) Determine if the system is independent, dependent or inconsistent.