

# Homework 1

1. Solve the systems of equations by using the reduced row-echelon form of their augmented matrices

A.  $x_1 + 2x_2 = 7$

$$2x_1 + x_2 = 8$$

B.  $x_1 - 3x_3 = -2$

$$3x_1 + x_2 - 2x_3 = 5$$

$$2x_1 + 2x_2 + x_3 = 4$$

C.  $4x_1 + 12x_2 - 7x_3 - 20x_4 = 22$

$$3x_1 + 9x_2 - 5x_3 - 28x_4 = 30$$

D.  $3x_1 + 3x_2 + 12x_3 = 6$

$$x_1 + x_2 + 4x_3 = 2$$

$$2x_1 + 5x_2 + 20x_3 = 10$$

$$-x_1 + 2x_2 + 8x_3 = 4.$$

E.  $x + 2y + 6z = 1$

$$2x + 5y + 15z = 4$$

$$3x + y + 3z = -6.$$

2. Solve the systems whose augmented matrices are

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 8 & 12 \end{pmatrix}, \quad \begin{pmatrix} 2 & 1 & -1 & 3 \\ 1 & -1 & 1 & 0 \\ 0 & 1 & 2 & 1 \end{pmatrix}.$$

3. (a) Find a quadratic function whose graph passes through  $(2, 5)$ ,  $(3, 0)$ ,  $(4, 20)$ .  
(b) Find a cubic function that passes through the points  $(-1, 3)$ ,  $(0, 0)$ ,  $(1, 1)$ ,  $(4, 58)$ .