

Homework Assignment #1

(NYC Summer 2006)

Show all your work!

1. Find the general solution, using Gauss-Jordan elimination.

$$\begin{aligned} -x_1 + 3x_2 - 2x_3 + 4x_4 &= 0 \\ 2x_1 - 6x_2 + x_3 - 2x_4 &= -3 \\ x_1 - 3x_2 + 4x_3 - 8x_4 &= 2 \end{aligned}$$

2. For which values of k will the following system have

- (a) No solutions?
- (b) Exactly one solution?
- (c) Infinitely many solutions?

$$\begin{aligned} 2x + 4y + kz &= -4 \\ x + 5y - z &= 2 \\ -x + y + 2z &= k \end{aligned}$$

3. Use linear algebra techniques to find the equation of the parabola that passes through the points $(-1, 13)$, $(0, 8)$ and $(1, 9)$.