

## MATH 1210 A01 Summer 2013 Problem Workshop 8

For the following, Solve the following systems of equations using Gauss-Jordan Elimination.

1.

$$\begin{aligned}2x + 3y - 4z + w &= 16 \\ y + 2z - 3w &= -12 \\ 3x - y + 2w &= 9 \\ 2x + y + z &= 3\end{aligned}$$

2.

$$\begin{aligned}2x + 3y - 4z + w &= 3 \\ x - 2y + z &= 6 \\ 3x + y + w &= 4 \\ 6x + 2y - 3z + 2w &= 13\end{aligned}$$

3.

$$\begin{aligned}x + 5y + 3z - 2w &= 6 \\ 2x - y + z &= -1 \\ x + 2y - 4w &= 6 \\ 3x + 7y + 7z &= 3\end{aligned}$$

4. Find the equation of a cubic polynomial  $y = ax^3 + bx^2 + cx + d$  which passes through the points  $(0, 10)$ ,  $(1, 7)$ ,  $(3, -11)$  and  $(4, -14)$ .

### Answers

1.  $x = 1, y = 2, z = -1, w = 4$

2.  $x = \frac{47}{21} - \frac{2}{7}t, y = -\frac{19}{7} - \frac{1}{7}t, z = -\frac{5}{3}, w = t$

3. No Solution

4.  $y = x^3 - 6x^2 + 2x + 10$