

Math 225 – Quiz #13: Systems of Equations II

Clearly and neatly show all work for each problem. Solutions with no work will receive no credit.

1. Find the general solution for the following system.

$$x' = 3x + 2y + 4z$$

$$y' = 2x + 2z$$

$$z' = 4x + 2y + 3z$$

2. Find the general solution for the following system.

$$x' = 2x + y + 2z$$

$$y' = 3x + 6z$$

$$z' = -4x - 3z$$

3. Solve the following initial-value problem.

$$\mathbf{X}' = \begin{pmatrix} 1 & 1 \\ -2 & -1 \end{pmatrix} \mathbf{X}, \quad \mathbf{X}(0) = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

4. Solve the following initial-value problem.

$$\mathbf{X}' = \begin{pmatrix} 1 & -12 & -14 \\ 1 & 2 & -3 \\ 1 & 1 & -2 \end{pmatrix} \mathbf{X}, \quad \mathbf{X}(0) = \begin{pmatrix} -7 \\ 1 \\ 1 \end{pmatrix}$$