Math 225 – Quiz #12: Systems of Equations I

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.

$$x' = -6x + 5y$$
$$y' = -5x + 4y$$

2. Find the general solution for the following system.

$$x' = 2x - 7y$$
$$y' = 5x + 10y + 4z$$
$$z' = 5y + 2z$$

3. Solve the following initial-value problem.

$$\boldsymbol{X}' = \begin{pmatrix} 1 & 3 \\ -2 & 6 \end{pmatrix}\boldsymbol{X}, \qquad \boldsymbol{X}(0) = \begin{pmatrix} 1 \\ 4 \end{pmatrix}$$

4. Solve the following initial-value problem.

$$\boldsymbol{X}' = \begin{pmatrix} 2 & 4 \\ -1 & 6 \end{pmatrix}\boldsymbol{X}, \qquad \boldsymbol{X}(0) = \begin{pmatrix} -1 \\ 6 \end{pmatrix}$$