MATH3332 Quiz 1

1. *(30pts)* Let $A = \begin{bmatrix} 7 & 8 & 9 \\ 3 & 2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} -1 & 0 & -1 \\ 2 & 1 & 0 \end{bmatrix}$, $x = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$, $y = \begin{bmatrix} 3 \\ 4 \end{bmatrix}$

   Find Ax, $A^T y$, AB^T

2. (a) *(40pts)* Solve the following system using Gaussian elimination:

$$x - y - 4z = -6$$
$$-2x + y + 6z = 7$$
$$3x - 2y - 5z = -3$$

   (b) *(30pts)* Calculate the LU decomposition of the above linear system (please write explicitly the matrices L and U).