Q1. (3 points) Use Gauss Jordan Elimination method to find inverse of the matrix
\[
\begin{bmatrix}
1 & 2 & 1 \\
1 & 0 & 2 \\
0 & 1 & 1 \\
\end{bmatrix}
\]
\[
\begin{bmatrix}
1 & 0 & 0 \\
0 & 1 & 0 \\
0 & 0 & 1 \\
\end{bmatrix}
\]

Q2. (4 points) Use Cramer's rule to find value of \( z \) for the system \( x + y = 1; y + z = 2; x + z = 3 \).

Q3. (3 points) Determine values of 'k' for which the system \( 2x + y = 2; 4x + 2y = k \) has (a): unique solution, (b): no solution and (c) infinitely many solutions:

\[
\begin{bmatrix}
1 & 0 & 1 \\
0 & 1 & 1 \\
1 & 0 & 1 \\
\end{bmatrix}
\begin{bmatrix}
x \\
y \\
z \\
\end{bmatrix} = \begin{bmatrix} 2 \\ 1 \\ k \end{bmatrix}
\]

(a) \( k = 4 \) Infinitely Many Solutions
(b) \( k \neq 3 \) No Solution
(c) No Unique Solution