CPE 310 Quiz 01: Solving System of Linear Equations & Interpolation and Curve Fitting

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Question 1 Given $x^{(0)} = [0 \quad 0 \quad 0]^T$, find $x^{(1)}$ by applying Gauss-Seidel method to the following system of equations:

$$
\begin{aligned}
2x_1 + 7x_2 - 11x_3 &= 6 \\
x_1 + 2x_2 + x_3 &= -5 \\
7x_1 + 5x_2 + 2x_3 &= 17
\end{aligned}
$$

Question 2 The polynomial that passes through the following $x - y$ data is given by:
$8.125x^2 - 324.75x + 3237, \ 15 \le x \le 24$

x	15	18	24
y	121	?	123

The corresponding divided difference polynomial is: $b_0 + b_1(x - 15) + b_2(x - 15)(x - 18)$.

1. Find the value for b_0.

2. Find the value for b_2.

Question 3 Find C^{-1}, using Gauss-Jordan elimination.

$$
C = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 0 & 1 \\ 2 & 3 & 3 \end{bmatrix}
$$