Internal Assessment Sem 1 BBE . Tot. marks 20

Answer all 3 questions

1) Find maximum & minimum values for (6 marks)

$$f(x) = \frac{1}{4}x^4 - \frac{5}{6}x^3 + \frac{1}{2}x^2 - 1$$

where $f(x)$ defined over $x \in [-1, 3]$

2) Find critical points, identify whether maximum or minimum using the 2nd derivative test (7 marks)

$$g(x) = x^3 - 3x^2 + 2$$

- Sketch the function
- Is the function defined over $x \in (1, \infty)$ concave or convex?

3) Given $A = \begin{bmatrix} 4 & 1 & -1 \\ 0 & 3 & 2 \\ 3 & 0 & 7 \end{bmatrix}$ Test if inverse A^{-1} exists

- If it exists, find A^{-1} (7 marks)