

Questions

1) Given $f(x) = 2x^3 - 30x^2 + 126x + 59$

- Find critical points
- Determine if max, min or inflection point
- Carefully state all conditions. (7 marks)

2) Prove that $f(x) = |x|$ is convex in $(-\infty, \infty)$

- Plot $f(x)$
- Use line segment method (6 marks)

3) Given the following system of linear equations:

$$\begin{aligned}4x + y - 5z &= 8 \\-2x + 3y + z &= 12 \\3x - y + 4z &= 5\end{aligned}$$

- Express as $A\vec{x} = \vec{b}$
- Find A^{-1} i.e. A inverse (7 marks)

