

Maxima and Minima

1. Find critical points for $y = 4x^3 + 5x^2 - 42x + 7$, then find the extrema. Justify your reasoning.
2. Find critical points for $y = \sqrt[3]{x^2 - x - 2}$.
3. Find the absolute max value of $f(x) = x^3 + x^2 - 8x + 5$ on the closed interval $[-4, 4]$. Justify your answer.
4. Find the absolute max value of $f(x) = \sqrt{3 + 2x - x^2}$ on $-2 \leq x \leq 4$. Justify your answer.