

For each function, list critical points and give reason for each ($f' = 0$ or $f' = \text{DNE}$).

1. $f(x) = \ln(x^2 + 3x + 2)$

CP	reason

2. $f(x) = x^2 e^{-3x}$

CP	reason

3. $f(\theta) = 2\cos\theta + \sin^2\theta, [0, 4\pi]$

CP	reason

Find all extrema.

$$4. \quad g(x) = 2x^3 - 3x^2 - 12x + 1, \quad [2, 3]$$

$$5. \quad h(x) = x^3 - 6x^2 + 5$$

$$6. \quad y = \sqrt[3]{t} (8-t), \quad 0 \leq t \leq 8$$