

4.4 Concavity and the Second Derivative Test

Name:

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P 2. Determine the open intervals on which the graph of $g(x) = 3x^2 - x^3$ is concave upward or concave downward.

P 6. Determine the open intervals on which the graph of $f(x) = \frac{2x^2}{3x^2 + 1}$ is concave upward or concave downward.

P 12. Determine the open intervals on which the graph of $y = x + \frac{2}{\sin x}$ on the interval $(-\pi, \pi)$ is concave upward or concave downward.

P 14. Find the points of inflection of $f(x) = -x^3 + 6x^2 - 5$.

P 18. Find the points of inflection of $f(x) = (x - 2)^3(x - 1)$.

P 27. Find the points of inflection of $f(x) = 2 \sin x + \sin 2x$ on the closed interval $[0, 2\pi]$.

P 38. Determine all the relative extrema of $f(x) = -x^3 + 7x^2 - 15x$.

P 44. Determine all the relative extrema of $f(x) = \frac{x}{x-1}$.

P 58. Determine all the relative extrema of $f(x) = \arcsin x - 2x$.