

8-2 Critical Points & Points of Inflection

Write equations for $f'(x)$ and $f''(x)$. Use these to determine the following:

- a) local extreme, and plateaus
- b) points of inflection
- c) global extrema

27. $f(x) = -x^3 + 5x^2 - 6x + 7$

Key

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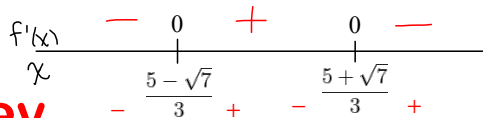
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$$f'(x) = -3x^2 + 10x - 6 = -(3x^2 - 10x + 6) \quad x = \frac{5 \pm \sqrt{7}}{3}$$

$$f''(x) = -6x + 10 \quad x = \frac{5}{3}$$

local maximum: $\frac{5 + \sqrt{7}}{3}$

local minimum: $\frac{5 - \sqrt{7}}{3}$



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30. $f(x) = -x^3 + 9x^2 - 28x + 20$

$$f'(x) = -3x^2 + 18x - 28 = -(3x^2 - 18x + 28)$$

$$b^2 - 4ac = 324 - 4(84) = 324 - 336 = -12$$

$$f''(x) = -6x + 13$$

$$x = 3$$

$f(x)$ _____
 x no critical points

local extrema: *none*

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