Function Analysis Part 2 Assignment

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Function Analysis Part 2 Assignment

Question 0

Watch the lecture video here.

Did you watch the video? [Type yes or no.]

Analyze the following functions using the steps from class.

Question 1

$f(x) = e^x \cdot \sqrt[3]{x^2 + 2x + 1}$

[We'll work through this one together in class.]

Step 1: Find the domain of f. Discuss vertical asymptotes and holes.

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Step 2: Find the derivative f'.

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Step 3: Find the critical points of f (where f' is 0 or undefined).

Step 4: See if the sign of f' actually changes at the critical points of f, and determine whether f has a local maximum or local minimum at these points.

Step 5: Find the second derivative f''.

Step 6: Find the critical points of f' (where f'' is 0 or undefined).

Step 7: See if the sign of f'' actually changes at the critical points of f', and determine whether f has an inflection point at these points.

Step 8: Find the x- and y-intercepts.

Step 9: Determine the end behavior.

Step 10: Make an informed graph. Mark any x- and y-intercepts, relative maxima and minima, and inflection points.

Step 11: Discuss absolute max/min, increasing/decreasing, concave up/down.

Question 2

$$g(x) = \frac{6x^2 - x - 2}{2x^2 + x - 3}$$

[Hint: One graph will not show all the important features.]

Step 1: Find the domain of g.

Step 2: Find the derivative g'.

Step 3: Find the critical points of g (where g' is 0 or undefined).

Step 4: See if the sign of g' actually changes at the critical points of g, and determine whether g has a local maximum or local minimum at these points.

Step 5: Find the second derivative g''.

Step 6: Find the critical points of g' (where g'' is 0 or undefined).

Step 7: See if the sign of g'' actually changes at the critical points of g', and determine whether g has an inflection point at these points.

Step 8: Find the x- and y-intercepts.

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Step 9: Determine the end behavior.

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Step 10: Make an informed graph. Mark any x- and y-intercepts, relative maxima and minima, and inflection points.

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Step 11: Discuss absolute max/min, increasing/decreasing, concave up/down.