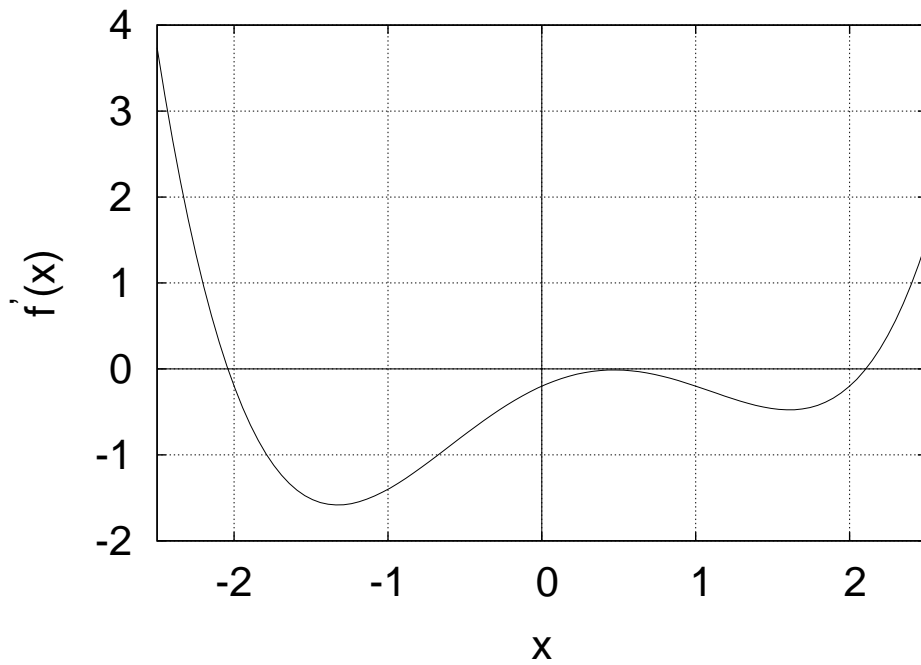


Chapter 4.1: Using First and Second Derivatives

Calculus I

College of the Atlantic. November 4, 2024

1. Consider the function $f(x) = -x^2 + 6x - 5$.
 - (a) Find and classify all critical points. Determine any local maxima or minima (x and y values).
 - (b) Find all inflection points.
 - (c) Sketch the function.
2. The figure below shows a plot of a function's derivative. Find and classify all critical points. Find any inflection points. Sketch $f(x)$ and $f''(x)$.



3. Consider the function $g(x) = xe^{-x}$.
 - (a) Find and classify all critical points. Determine any local maxima or minima (x and y values).
 - (b) Find all inflection points.
 - (c) Sketch the function.