

1. A function f has second derivative $f^{(2)}(x) = (x - 1)(x - 3)$. Find the intervals on which f is concave up and those on which it is concave down.

2. A function g has a critical point at $x = 0$ and its second derivative is $g^{(2)}(x) = \frac{2(3x^2 - 1)}{(x^2 + 1)^3}$. Determine if $x = 0$ is a relative minimum or relative maximum for the function.

3. Find all horizontal and vertical asymptotes of the graph of $h(x) = \frac{x}{x-1}$.