1 3.8: Higher Derivatives

Second derivative: derivative of the first derivative

What the second derivative tells us:

Examples:

Label each of the graphs below as the original function, first derivative, or second derivative.
Find and simplify the first and second derivatives of \( f(x) = \sqrt{x^2 + 1} \)

Given \( x^3 + y^3 = 1 \), find \( \frac{dy}{dx} \) and \( \frac{d^2 y}{dx^2} \).
On Beyond Average: Given \( f(x) = \frac{1}{1+x} \), find a formula for \( f^{(n)}(0) \) (the \( n \)th derivative at \( x = 0 \))