Section 4.1: Continuous Compound Interest

Compound interest formula: \( A = P \left(1 + \frac{r}{m}\right)^{mt} \)

Continuous compound interest formula: \( A = Pe^{rt} \)

Example: Invest $3,000 at 7% compounded continuously. How much is in the account in 2 years?

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Sections 4.2, 4.3, 4.4: More Derivative Rules and Applications

Product Rule

\[ y = f(x)g(x) \]

Example: Find the derivatives of these functions. Do not simplify.

A) \( y = (x^3 + 2x + 7)(x^5 + 5x^2 + 8) \)

B) \( y = (x^5 + 7)(\sqrt{x} + 6) \)

Quotient Rule

\[ y = \frac{f(x)}{g(x)} \]
Example: Find the derivatives of these functions. Do not simplify.

A) \( y = \frac{x^2 + 3}{x^4 + 7} \)

B) \( y = \frac{7}{x^5 + 3x} \)

C) \( y = \frac{(x^2 + 5)(x^5 + 7)}{x^4 + 3} \)