

Set 008 The Power Rule for Derivatives

[1] Write the limit for finding the derivative function for $f(x) = 3x^4$. Evaluate the limit expression.

Use the Power Rule to find the derivative of each function.

[2] $f(x) = x^6$

[3] $f(x) = \sqrt[3]{x}$

[4] $f(x) = \frac{1}{x^3}$

[5] $f(x) = \frac{1}{\sqrt{x}}$

[6] $f(x) = x^{\frac{3}{2}}$

[7] $f(x) = \frac{1}{x^{\frac{5}{3}}}$

Use the Power Rule and the Constant Multiple Rule to find the derivative of each function.

[8] $f(x) = 9x^2$

[9] $f(x) = \frac{4}{x}$

[10] $f(x) = \frac{2}{3x^{10}}$

[11] $f(x) = \frac{1}{4\sqrt[3]{x}}$

[12] $f(x) = 4x^{\frac{1}{4}}$

[13] $f(x) = 6x^{\frac{3}{5}}$

Use the Power Rule, the Constant Rule, the Constant Multiple Rule, and the sum rule.

[14] $f(x) = 3x^2 - 5x + 4$

[15] $f(x) = 1 - x - x^2 - 4x^3$

[16] $f(x) = \pi^3$

[17] $f(x) = 3x^2 + 4x - 2 - \frac{1}{x}$

[18] $f(x) = \frac{3}{x^2} - \frac{4}{x^3}$

[19] $f(x) = \frac{x^2 + 2x + 1}{x}$

[20] $f(x) = \frac{4x^3 - x^2 + 6}{3x^2}$

[21] $f(x) = \frac{1}{2\sqrt{x}} - \frac{2}{x^3}$

[22] $f(x) = x^{\frac{4}{5}} - 5x^{\frac{2}{5}} + 10x^{\frac{1}{5}}$