PDF 2.020 Power Rule

The Power Rule states that if $f(x) = x^n$, then $f'(x) = nx^{n-1}$

Proof:

Example 1

If $f(x) = 4x^5$, then determine $f'(x)$

Example 2

If $f(x) = 11x^{\frac{5}{2}}$, then determine $f'(x)$

Example 3

If $f(x) = 7$, then determine $f'(x)$

Example 4

Determine $g'(x)$ if $g(x) = 4x^3 - 3\sqrt{x}$

Example 5

Determine $\mathrm{k}'(x)$ if $\mathrm{k}(x) = (5x - 3)^2$

Example 6

Determine $\mathrm{k}'(x)$ if $\mathrm{k}(x) = -3(15x^4 + 8x^3 - 3x + 1)^6$

Example 7

Determine the equation of the line tangent to the curve $y = x^3 + 2x^2 - 4x + 1$ at $x = 4$.

Example 8

Determine the points on the curve $y = x^3 + 2x^2 - 4x + 1$ where the tangent lines are horizontal.