

Power Rule for Differentiation:  $\frac{d}{dx} (x^n) = n x^{n-1}$

$$\frac{d}{dx} (x^3)$$

$$\frac{d}{dx} \left( \frac{1}{x} \right)$$

$$\frac{d}{dt} \left( t^{\frac{1}{3}} \right)$$

$$\frac{d}{dx} (x^7)$$

$$\frac{d}{dx} \left( \frac{1}{x^2} \right)$$

$$\frac{d}{dz} \left( z^{-2/3} \right)$$

$$\frac{d}{dt} (t^4)$$

$$\frac{d}{dy} (\sqrt{y})$$

$$\pi(q) = q^5, \pi'(q) =$$

Power Rule for Differentiation:  $\frac{d}{dx} (x^n) = n x^{n-1}$

$$\frac{d}{dy} (y^m) = m y^{m-1}$$

$$\begin{aligned} \frac{d}{dx} (n^x) &= x n^{x-1} \quad \times \\ &= n x^{n-1} \quad \times \end{aligned}$$

$$\frac{d}{dz} (z^k) = k z^{k-1}$$

Power Rule for Differentiation:  $\frac{d}{dx} (x^n) = n x^{n-1}$

$$\frac{d}{dx} (x^3) = 3x^2$$

$$\frac{d}{dx} (x^7) = 7x^6$$

$$\frac{d}{dt} (t^4) = 4t^3$$

$$\pi(q) = q^5, \pi'(q) = 5q^4$$

Power Rule for Differentiation:  $\frac{d}{dx} (x^n) = n x^{n-1}$

$$\frac{d}{dx} \left( \frac{1}{x} \right) = \frac{d}{dx} (x^{-1}) = -1 x^{-2} = -\frac{1}{x^2}$$

$$\frac{d}{dx} \left( \frac{1}{x^2} \right) = \frac{d}{dx} (x^{-2}) = -2 x^{-3} = -\frac{2}{x^3}$$

$$\frac{d}{dy} (\sqrt{y}) = \frac{d}{dy} (y^{1/2}) = \frac{1}{2} y^{-1/2} = \frac{1}{2} \frac{1}{y^{1/2}} = \frac{1}{2\sqrt{y}}$$

$$\frac{d}{dt} (\sqrt[3]{t}) = \frac{d}{dt} (t^{1/3}) = \frac{1}{3} t^{-2/3} = \frac{1}{3} \frac{1}{t^{2/3}} = \frac{1}{3\sqrt[3]{t^2}}$$

$$\frac{d}{dz} (z^{-2/3}) = -\frac{2}{3} z^{-5/3}$$

$$-\frac{2}{3} - 1 = -\frac{2}{3} - \frac{3}{3} = -\frac{5}{3}$$