FUNDAMENTALS DERIVATIVES FOMULAS

Derivatives Formulas

1. $\dfrac{d}{dx}(c) = 0$, 'c' is any constant

2. $\dfrac{d}{dx}(x) = 1$

3. $\dfrac{d}{dx}(x^n) = nx^{n-1}$ (The Power Rule)

4. $\dfrac{d}{dx}\left[f(x)g(x)\right] = \left(\dfrac{d}{dx}f(x)\right)g(x) + f(x)\left(\dfrac{d}{dx}g(x)\right)$ $\left\{\begin{array}{c}\text{The}\\\text{Product}\\\text{Rule}\end{array}\right\}$

5. $\dfrac{d}{dx}\left[\dfrac{f(x)}{g(x)}\right] = \dfrac{g(x)\left(\dfrac{d}{dx}f(x)\right) - f(x)\left(\dfrac{d}{dx}g(x)\right)}{\left[g(x)\right]^2}$ $\left\{\begin{array}{c}\text{The}\\\text{Qoutient}\\\text{Rule}\end{array}\right\}$

6.
$\left\{\begin{array}{l}\text{i.} \quad \dfrac{dy}{dx} = \dfrac{dy}{dt} \times \dfrac{dt}{dx}\\[8pt]\text{ii.} \quad \dfrac{dy}{dx} = \dfrac{dy}{d\theta} \times \dfrac{d\theta}{dx}\\[8pt]\text{iii.} \quad \dfrac{dy}{dx} = \dfrac{dy}{du} \times \dfrac{du}{dx}\\[8pt]\text{iv.} \quad \dfrac{dy}{dt} = \dfrac{dy}{dx} \times \dfrac{dx}{dt}\end{array}\right.$ (The Chain Rules)

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