

$$(iv) \frac{d}{dx} (a^x) = a^x \log_e a = a^x \ln a$$

$$\frac{d}{dx} (e^x) = e^x, \quad \frac{d}{dx} (\log_e x) = \frac{1}{x}$$

$$(v) \frac{d}{dx} (\sin^{-1} x) = \frac{1}{\sqrt{1-x^2}}, \quad \frac{d}{dx} (\cot^{-1} x) = \frac{-1}{1+x^2}$$

$$\frac{d}{dx} (\cos^{-1} x) = \frac{-1}{\sqrt{1-x^2}}, \quad \frac{d}{dx} (\tan^{-1} x) = \frac{1}{1+x^2}$$

(vi) $y = uv$ rule

$$\frac{dy}{dx} = u \frac{dv}{dx} + v \frac{du}{dx}$$

$$\frac{d}{dx} (\sec^{-1} x) = \frac{1}{|x| \sqrt{x^2-1}}$$

$$\frac{d}{dx} (\csc^{-1} x) = \frac{-1}{|x| \sqrt{x^2-1}}$$

(vii) $y = \frac{u}{v}$ rule

$$\frac{dy}{dx} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}$$

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Probability

Symbol

Meaning

$\bar{A}$

not A

$A \cup B$

atleast one of A or B or both

$A \cap B$

A & B

$(\bar{A} \cap B) + (A \cap \bar{B})$

exactly one of A or B