

HERAMB COACHING CLASSES**ATTEMPT ANY SIX**

Q.1. Find $\frac{dy}{dx}$ for the following.

1) $y = \sin^{-1} \left(\frac{1-x^2}{1+x^2} \right)$

2) $y = \tan^{-1} \left(\frac{6x}{1-5x^2} \right)$

Q.2. Differentiate the following functions in their respective domains with respect to x

1) $y = \frac{(2x-3)^{1/4}}{(3x+1)^{1/3} (2-x)^{7/2}}$

2) $y = (\sin x)^x + x \cdot \sin x$

Q.3. If $x^y = e^{x-y}$ then show that $\frac{dy}{dx} = \frac{\log x}{(1+\log x)^2}$

Q.4. If $x^7 y^9 = (x+y)^{16}$, then show that $\frac{dy}{dx} = \frac{y}{x}$

Q.5. Differentiate e^{4x+5} with respect to e^{3x}

Q.6. If $x = e^{\sin t}$, $y = e^{\cos t}$, then show that $\frac{dy}{dx} = -\frac{y}{x} \cdot \frac{\log x}{\log y}$

Q.7. If $x = \frac{4t}{1+t^2}$ and $y = 3 \left(\frac{1-t^2}{1+t^2} \right)$, then show that $\frac{dy}{dx} = -\frac{9}{4} \cdot \frac{x}{y}$