

ATOMIC ENERGY EDUCATION SOCIETY, MUMBAI

CLASS: XII(MATHS)  
CHAPTER-5

WORKSHEET: MODULE 3/4  
TOPIC: CONTINUITY AND DIFFERENTIABILITY

- 1) Find  $\frac{dy}{dx}$  if  $y = \sin^{-1}(x\sqrt{x})$
- 2) Find  $\frac{dy}{dx}$  if  $y = \sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$
- 3) Find  $\frac{dy}{dx}$  if (i)  $y = (x)^{x\cos x} + \frac{x^2+1}{x-1}$  (ii)  $y = x^{x^2-3} + (x-3)^{x^2}$
- 4) Find  $\frac{dy}{dx}$  if (i)  $y = (x \cos x)^x + (x \sin x)^{1/x}$  (ii)  $y = \sin(x^x)$
- 5) Find  $\frac{dy}{dx}$  if  $y = \left(x + \frac{1}{x}\right)^x + x^{\left(x + \frac{1}{x}\right)}$
- 6) Find  $\frac{dy}{dx}$  if  $x^y + y^x = 1$
- 7) Find  $\frac{dy}{dx}$  if  $(\cos x)^y = (\cos y)^x$
- 8) Find  $\frac{dy}{dx}$  if  $xy = e^{x-y}$
- 9) Find  $\frac{dy}{dx}$  if  $y^x + x^y + x^x = a^b$
- 10) If  $x^y - y^x = a^b$  find  $\frac{dy}{dx}$

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