

Pre Primary wing of VSA

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Class – 12th Worksheet-27 **Chapter-7**

Subject Maths Differentiation

Q.1 Differentiate the following with respect to x

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

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(iii)
$$y = \sqrt{\cos^{-1}\sqrt{x}}$$
 (iv) $y = \tan^{-1}\left(\frac{3x - x^3}{1 - 3x^2}\right), x \in \left(-\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right)$

Q.2 Differentiate the following with respect to x

(i)
$$\tan^{-1}\left(\sin e^x\right)$$
 (ii) $\sin^{-1}\left(\sqrt{\sin x^2}\right)$ (ii) $\sin^{-1}\left(\frac{a+b\cos x}{b+a\cos x}\right)$

Q.3 Differentiate the following with respect to x

(i)
$$\tan^{-1}(\sec x + \tan x)$$
 (ii) $\sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$ (iii) $\tan^{-1}\left(\sqrt{\frac{a-x}{a+x}}\right)$ (iv) $\tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right)$