

Class – 12th

Chapter-7

Subject Maths

Worksheet-27

Differentiation

Q.1 Differentiate the following with respect to x

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

(ii) $y = \sin^{-1}\sqrt{\cos x}$

(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) $\tan^{-1}(\sin e^x)$

(ii) $\sin^{-1}(\sqrt{\sin x^2})$

(iii) $\sin^{-1}\left(\frac{a+b\cos x}{b+a\cos x}\right)$

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) $\tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right)$