Class – 12th **Chapter-7** **Subject Maths**

Worksheet-30 Differentiation

Find $\frac{dy}{dx}$, when

1. (a) $x = a\sec t,\ y = b\tan t$ (b) $x = \log t + \sin t,\ y = e^t + \cos t$
2. (a) $x = \log t,\ y = e^t + \cos t$ (b) $x = a\cos\theta,\ y = b\sin\theta$
3. (a) $x = \cos\theta - \cos 2\theta,\ y = \sin\theta - \sin 2\theta$ (b) $x = \theta - \sin\theta,\ y = a(1+\cos\theta)$
4. (a) $x = \frac{\sin^3 t}{\sqrt{\cos 2t}},\ y = \frac{\cos^3 t}{\sqrt{\cos 2t}}$ (b) $x = a\left(\cos t + \log\tan\frac{t}{2}\right),\ y = a\sin t$
5. (a) $x = \sqrt{\sin 2\theta},\ y = \sqrt{\cos 2\theta}$ (b) $x = a\cos^3 t,\ y = a\sin^3 t$
6. If $x^3 + y^3 = t - \frac{1}{t}$ and $x^6 + y^6 = t^2 + \frac{1}{t^2}$, then prove that $x^4 y^2 \frac{dy}{dx} = 1$