

External Steps Pre Primary wing of VSA

An English Medium Co.Ed. School | Science & Commerce

An English Medium Co.Ed. School | Science & Commerce W : www.vsajaipur.com | E : vsajaipur@gmail.com M. : +91 9460356652, 8058999828 Add. : 84, Krishna Vihar, Behind Narayan Niwas, Gopalpura Bypass, Jaipur - 302015

Class – 12th Worksheet-31

- 1. Find $\frac{d^2y}{dx^2}$, when
 - (a) $y = x^3 + \tan x$ (b) $y = x^2 + 3x + 2$ (c) $y = x \cos x$ (d) $y = 2 \sin x + 3 \cos x$ (e) $y = e^{-x} \cos x$ (f) $y = a \sin x - b \cos x$

Chapter-7

2. If $y = a \sin x + b \cos x$, then prove that

$$\frac{d^2y}{dx^2} + y = 0.$$

3. If $y = \sec x + \tan x$, then prove that

$$\frac{d^2 y}{dx^2} = \frac{\cos x}{\left(1 - \sin x\right)^2}.$$

4. If $y = a \cos nx + b \sin nx$, then prove that

$$\frac{d^2y}{dx^2} + n^2y = 0.$$

5. If
$$x = a\cos^3\theta$$
, $y = a\sin^3\theta$, then find $\frac{d^2y}{dx^2}$ at $\theta = \frac{\pi}{4}$

6. If $x^3 + y^3 - 3axy = 0$, then prove that

$$\frac{d^2 y}{dx^2} = \frac{2a^2 xy}{(ax - y^2)^3}.$$

7. If $y = \sin^{-1} x$, then prove that $(1-x^2)\frac{d^2 y}{dx^2} - x\frac{dy}{dx} = 0$.

8. If $y = (\sin^{-1} x)^2$, then prove that : $(1 - x^2) \frac{d^2 y}{dx^2} - x \frac{dy}{dx} - 2 = 0$.

Subject Maths Differentiation