

Class – 12<sup>th</sup>

Chapter-7

Subject Maths

Worksheet-29

Differentiation

Find  $\frac{dy}{dx}$  :

1. (a)  $2x + 3y = \sin y$

(b)  $x^2 + xy + y^2 = 200$

2. (a)  $\sqrt{x} + \sqrt{y} = \sqrt{a}$

(b)  $\tan(x + y) + \tan(x - y) = 4$

3. (a)  $\sin x + 2 \cos^2 y + xy = 0$

(b)  $x\sqrt{y} + y\sqrt{x} = 1$

4. (a)  $(x^2 + y^2)^2 = xy$

(b)  $\sin(xy) + \frac{x}{y} = x^2 - y$

5. (a)  $x^3 + y^3 = 3axy$

(b)  $x^y + y^x = a^b$

6. (a)  $y = x^y$

(b)  $x^a \cdot y^b = (x - y)^{a+b}$

7. (a)  $y = e^x + e^{x^2} + \dots + e^{x^5}$

(b)  $y = \sqrt{e^{x^x}}, x > 0$

8. (a)  $y = \frac{\cos x}{\log x}, x > 0$

(b)  $y = \sqrt{x}^{\sqrt{x}^{\sqrt{x}^{\dots}}}$

9. (a)  $y\sqrt{1-x^2} = \sin^{-1} x$

(b)  $y\sqrt{1+x} = \sqrt{1-x}$

10. (a)  $y = \sqrt{\sin x + \sqrt{\sin x + \sqrt{\sin x + \dots \infty}}}$

(b)  $y^x + x^y + x^x = a^b$