

1. Differentiate w.r.t x

- a)  $x^2 + 1$
- b)  $2x^2 + 1$
- c)  $2x + x + 1$
- d)  $\sqrt[3]{x}$
- e)  $x^2 + \frac{1}{x^2} - 3x$
- f)  $\sqrt{x}$
- g)  $\frac{1}{\sqrt{x}}$

2. Differentiate the following w.r.t.x.

- (i) 1993 (ii)  $\pi$  (iii)  $e$

3. Differentiate the following w.r.t.x.

- (i)  $\frac{x+1}{x+2}$

- (ii)  $\frac{3x+4}{4x+5}$

- (iii)  $\frac{x^2+1}{x-1}$

- (iv)  $\frac{3}{\sqrt{x}}$

- (v)  $\frac{1-x^2}{\sqrt{x}}$

- (vi)  $\frac{2x+2}{x^2}$

4. Differentiate  $(x^2 + 3)(x^4 - 9)$  w.r.t.x.5. Differentiate  $(4x^2 - 7)^{1/2}$  w.r.t.x.6. Differentiate  $(3 + 2x^3)\sqrt{x}$  w.r.t.x.7. Differentiate  $(\sqrt{x} + x^3)\sqrt{x}$  w.r.t.x.8. Differentiate  $\frac{t^3}{1-t^3}$  w.r.t. t9. Given  $S = 3t^2 + 9$ . Calculate

$$\frac{dS}{dt}$$

10. A metal ring is being heated such that its area in  $m^2$  at any time t second is given by

$$A = 3t^2 + \pi.$$

Find Rate of change of Area with respect to time.

11. Differentiate w.r.t "t"

$$(3t + 2)^{\frac{3}{2}}$$