



### ACTIVITY-3

Differentiate the following functions:

1.  $y = \frac{e^u - e^{-u}}{e^u + e^{-u}}$

2.  $\tan(x - y) = \frac{y}{1 + x^2}$

3.  $y = \tan^{-1}(x - \sqrt{1 + x^2})$

4.  $y = \log_2(e^{-x} \cos \pi x)$

5.  $y = (\ln x)^{\cos x}$

1.  $y = \frac{r}{\sqrt{r^2 + 1}}$

2.  $e^y \cos x = 1 + \sin(xy)$

3.  $G(x) = \sqrt{1 - x^2} \arccos x$

4.  $y = 2x \log_{10} \sqrt{x}$

5.  $y = (\tan x)^{1/x}$

**The only way to learn mathematics is to do mathematics**

Find first order derivative:

1.  $G(y) = \frac{(y - 1)^4}{(y^2 + 2y)^5}$

2.  $1 + x = \sin(xy^2)$

3.  $g(x) = \sqrt{x^2 - 1} \sec^{-1} x$

4.  $f(x) = \log_5(xe^x)$

5.  $y = (\sin x)^{\ln x}$

1.  $F(z) = \sqrt{\frac{z - 1}{z + 1}}$

2.  $x^2 y^2 + x \sin y = 4$

3.  $y = \sin^{-1}(2x + 1)$

4.  $f(x) = \log_2(1 - 3x)$

5.  $y = (\cos x)^x$