

# Assignment 2

## Chapter-12:

## Differentiation

EE24BTECH11049

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1) If  $y = (x + \sqrt{1 + x^2})^n$ , then  $(1 + x^2) \cdot \frac{d^2y}{dx^2} + x \cdot \frac{dy}{dx}$  is  
[2002]

- (a)  $n^2 \cdot y$
- (b)  $-n^2 \cdot y$
- (c)  $-y$
- (d)  $2 \cdot x^2 \cdot y$

2) If  $f(y) = e^y$ ,  $g(y) = y$ ;  $y > 0$  and  $F(t) = \int_0^t f(t-y) \cdot g(y) dt$ , then  
[2003]

- (a)  $F(t) = t \cdot e^{-t}$
- (b)  $F(t) = 1 - t \cdot e^{-t} \cdot (1 + t)$
- (c)  $e^t - (1 + t)$
- (d)  $F(t) = t \cdot e^t$

3) If  $f(x) = x^n$ , then the value of  $f(1) - \frac{f'(1)}{1!} + \frac{f''(1)}{2!} - \frac{f'''(1)}{3!} + \dots - \frac{(-1)^n \cdot f^n(1)}{n!}$  is  
[2003]

- (a) 1
- (b)  $2^n$
- (c)  $2^n - 1$
- (d) 0