

ARJUNA (NEET)

Mod 1

Differentiation

DPP-03

sin30 to constant hai; diff. zero hoga na!

1. If $y = x^2 + 4x^3 - 8x + 4$, then find $\frac{dy}{dx}$

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- (A) $2x + 4x^2 - x$ (B) $2x + 12x^2 - 8$
(C) $2x + 4x^3 - 8$ (D) $2x + 12x^2 - x$

2. Find $\frac{dv}{dt}$ at $t = 2$, if $v = 2t^2 + 4t$.

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- (A) 4 (B) 8
(C) 12 (D) 16

3. $\frac{d}{dx} \left(1 + \frac{1}{x^2} + \frac{1}{x^3} \right)$

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- (A) $x + \frac{1}{x^2} + \frac{1}{x^3}$ (B) $\frac{-2}{x^3} - \frac{3}{x^4}$
(C) $x - \frac{1}{x^2} - \frac{3}{x^3}$ (D) $\frac{-2}{x} - \frac{3}{x^2}$

4. $y = \sec x + \tan x$, value of $\frac{dy}{dx}$ is:

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- (A) $\sec^2 x + \tan x$
(B) $\tan^2 x + \sec x$
(C) $\sec x (\tan x + \sec x)$
(D) $\sec x (1 + \sec x)$

5. $\frac{d}{dx} (\sin x \operatorname{cosec} x)$ is:

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- (A) $\sin^2 x - \operatorname{cosec}^2 x$ (B) x
(C) 0 (D) 1

6. $\frac{d}{dx} \left(x + \frac{1}{x} + \log x + \tan x \right) =$

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- (A) $1 - \frac{1}{x^2} + \sec^2 x$
(B) $1 + \frac{1}{x^2} + \sec^2 x$
(C) $1 + \frac{1}{x^2} + \frac{1}{x} + \sec^2 x$
(D) $1 - \frac{1}{x^2} + \frac{1}{x} + \sec^2 x$

7. $\frac{d}{dx} (\sin 30^\circ)$ is equal to

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- (A) $\cos 30^\circ$ (B) $\operatorname{cosec} 30^\circ$
(C) 0 (D) $\sin 30^\circ$

8. $\frac{d}{dx} \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right)^2$ is equal to

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- (A) $1 + \frac{1}{x^2}$ (B) $-1 + \frac{1}{x^2}$
(C) $1 - \frac{1}{x^2}$ (D) $x^2 - 1$

9. If $y = \ln x + e^x$, then find $\frac{dy}{dx}$.

- (A) $e^x + x$ (B) $\ln x + x$ pg 7
(C) $\frac{1}{x} + e^x$ (D) $\frac{1}{x} + e$

10. $y = (1 - x^2)^{10}$, then find $\frac{dy}{dx}$. ***

- (A) $10(1 - x^2)^9$
(B) $10(1 - x^2)^9 x^2$
(C) $-20x(1 - x^2)^9$
(D) Not differentiable

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imp.

11. If $y = x^2 - 4x + 3$, then y at $x = 4$. *

- (A) 0 (B) 3
(C) 4 (D) 7

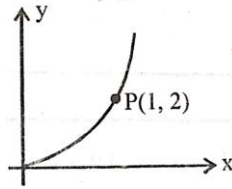
pg 7

imp.

12. If $y = 4x^2 - 2x + 4$, then find value of 'y' when $\frac{dy}{dx} = 0$. pg 8

doubt; my answer is 15/4

13. The equation of graph shown in figure is $y = 2x^2$. The slope of graph at point P is:



- (A) 1 (B) 2
(C) 3 (D) 4

14. If $y = e^{-\alpha x}$, then find double differentiation of y:

- (A) $\alpha e^{-\alpha x}$ (B) $-\alpha^2 e^{-\alpha x}$
(C) $e^{-\alpha x}$ (D) $\alpha^2 e^{-\alpha x}$

15. If $y = x^2$, then find dy/dx

- (A) must be zero (B) $2x$
(C) $2x \frac{dt}{dy}$ (D) $2x \frac{dx}{dt}$

16. * If $y = A \sin(kx - \omega t)$, then find $\frac{dy/dx}{dy/dt}$ imp.

- (A) $\frac{\omega}{k}$ (B) $\frac{k}{\omega}$
(C) $\frac{-k}{\omega}$ (D) $\frac{-\omega}{k}$

17. If $y = e^x \sin x$, then find $\frac{dy}{dx}$.

- (A) $e^x \sin x$
(B) $e^x \sin x + e^x \cos x$
(C) $e^x \cos x + \sin x$
(D) $e^x \cos x + e^x \cos x$

ANSWERS KEY

1. (B)
2. (C)
3. (B)
4. (C)
5. (C)
6. (D)
7. (A)
8. (C)
9. (C)
10. (C)
11. (C)
12. (1/4)
13. (D)
14. (D)
15. (B)
16. (C)
17. (B)

