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DPP – 4 (Basic Maths)

Video Solution on Website:-

https://physicsaholics.com/home/courseDetails/36

Video Solution on YouTube:-

https://youtu.be/McgpGuEFHaU

Written Solution on Website:-

https://physicsaholics.com/note/notesDetalis/70

Q 1. What is the derivative of $1 + 2\cos x$ w.r.t. 'x'??

(a)
$$1 + 2 \cos x$$

(b)
$$-2 \tan x$$

(c)
$$1 - 2\sin x$$

$$(d) - 2 \sin x$$

Differentiate w.r.t. 'x' if $y = 3 \sin x - 2$ Q 2.

(a)
$$\frac{dy}{dx} = 3$$

(b)
$$\frac{dy}{dx} = 3 \cos x$$

(a)
$$\frac{dy}{dx} = 3$$
 (b) $\frac{dy}{dx} = 3\cos x$ (c) $\frac{dy}{dx} = 3\cos x + 2$

$$(d) \frac{dy}{dx} = 3 \sin x$$

Differentiate w.r.t. 'x' if $y = \cos x - 2x$ Q 3.

(a)
$$\frac{dy}{dx} = \cos x - 2$$
 (b) $\frac{dy}{dx} = \sin x - 2$

(b)
$$\frac{dy}{dx} = \sin x - 2$$

(c)
$$\frac{dy}{dy} = -\sin x - 2$$

 $= -\sin x - 2$ (d) None of these

- What is the derivative of constant? Q 4.
 - (a) 1

(b) zero

(c) ∞

- (d) cannot be determined
- Find the derivative of the function: $F(x) = 6x^3 9x + 4$, w.r.t. 'x': Q 5.

(a)
$$F'(x) = 18x^2 + 9$$

(b)
$$F'(x) = 6x^2 - 9x$$

(c)
$$F'(x) = 18x^2 - 9$$

Find the value of $\frac{dy}{dx}$ at x = 2, $y = \ln x^2$: Q 6.

(c)
$$\frac{2}{x}$$

(d) None of these

Given $S = t^2 + 5t + 3$, find $\frac{dS}{dt}$ Q 7.

(a)
$$2t + 5 + \frac{3}{t}$$

(b)
$$2t + 5$$

(d)
$$t + 5$$

Q 8. If $y = 3x^5 - 3x - \frac{1}{x}$, Find $\frac{dy}{dx}$? (a) $15 x^4 - 3 + \frac{2}{x^2}$ (b) $15 x^4 + 3 + \frac{1}{x^2}$ (c) $15 x^4 - 3 + \frac{1}{x^2}$ (d) $15 x^4 - 3 - \frac{1}{x^2}$

(a)
$$15 x^4 - 3 + \frac{2}{x^2}$$

(b)
$$15 x^4 + 3 + \frac{1}{x^2}$$

(c)
$$15 x^4 - 3 + \frac{1}{x^2}$$

(d) 15
$$x^4$$
 - 3 - $\frac{1}{x^2}$

If $y = 6 x^7 - 4 x^5 + 5 x^4 + 5x^2 - 40$, find $\frac{dy}{dx}$? Q 9.

(a)
$$42 x^6 - 20 x^4 + 20 x^3 + 5x - 40$$

(b)
$$42 \times x^6 - 20 \times x^4 + 25 \times x^3 + 5x$$

(c)
$$42 ext{ } x^6 - 20 ext{ } x^4 + 20 ext{ } x^3 + 10x - 40$$

(d) $42 ext{ } x^6 - 20 ext{ } x^4 + 20 ext{ } x^3 + 10x$

(d)
$$42 x^6 - 20 x^4 + 20 x^3 + 10 x$$



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Q10.
$$y = \left(x + \frac{1}{x}\right)^2$$
, Find $\frac{dy}{dx}$?
(a) $\left(x + \frac{1}{x}\right)$ (b) $2x + \frac{1}{x^2}$

(a)
$$\left(x + \frac{1}{x}\right)$$

(b)
$$2x + \frac{1}{r^2}$$

(c)
$$2x - \frac{1}{r^2}$$

(c)
$$2x - \frac{1}{x^2}$$
 (d) $2x - \frac{2}{x^3}$

Q 11. Find the derivative of the function:
$$F(x) = 10\sqrt[5]{x^3} - \sqrt{x^7} + 6\sqrt[3]{x^8} - 3$$
, w.r.t. 'x': (a) $F'(x) = 6x^{-\frac{2}{5}} - \frac{7}{2}x^{\frac{5}{2}} + 16x^{\frac{5}{3}}$ (b) $F'(x) = 10x^{-\frac{2}{5}} - \frac{1}{2}x^{\frac{5}{2}} + 6x^{\frac{5}{3}}$

(a)
$$F'(x) = 6x^{-\frac{2}{5}} - \frac{7}{2}x^{\frac{5}{2}} + 16x^{\frac{5}{3}}$$

(b)
$$F'(x) = 10x^{-\frac{2}{5}} - \frac{1}{2}x^{\frac{5}{2}} + 6x^{\frac{5}{3}}$$

(c)
$$F'(x) = 6x^{-\frac{5}{2}} - \frac{7}{2}x^{\frac{7}{2}} + 16x^{\frac{8}{3}}$$

Q 12. Differentiate w.r.t. 'x' if y =
$$15 \sin x - 2e^x - \frac{1}{2}x^2 + 5$$

(a)
$$\frac{dy}{dx} = 15\cos x - 2xe^x - 2x$$
(c)
$$\frac{dy}{dx} = 15\cos x - 2$$

(b)
$$\frac{dy}{dx} = 15 \cos x - 2e^x - x$$

$$(c) \frac{dy}{dx} = 15 \cos x - 2$$

(b)
$$\frac{dy}{dx} = 15 \cos x - 2e^x - x$$

(d) $\frac{dy}{dx} = 15 \sin x - 2e^x - 2x$

Q 13. Differentiate w.r.t. 'x' if
$$y = 2 \ln x - 2x^2 - 3 \cos x + 1$$

(a)
$$\frac{dy}{dx} = 2e^x - 4x - 3\sin x$$

(b)
$$\frac{dy}{dx} = \frac{2}{x} - 4x - 3 \sin x$$

(a)
$$\frac{dy}{dx} = 2e^x - 4x - 3\sin x$$

(c) $\frac{dy}{dx} = 2e^x - 4x + 3\sin x$

(d)
$$\frac{dx}{dy} = \frac{x^2}{x} - 4x + 3\sin x$$

Q 14. Differentiate w.r.t. 'x' if
$$y = x^{\frac{5}{2}} + \ln x + 2 \sin x$$

(a)
$$\frac{dy}{dx} = \frac{5}{2}x^{\frac{3}{2}} + \frac{1}{x} + 2\cos x$$

(b)
$$\frac{dy}{dx} = \frac{5}{2}x^{\frac{3}{2}} - \frac{1}{x} - 2\cos x$$

(c)
$$\frac{dx}{dy} = x^{\frac{3}{2}} + \frac{1}{x} + 2\cos x$$

(d)
$$\frac{dy}{dx} = x^{\frac{3}{2}} + \frac{1}{x} - 2\cos x$$

Q 15. Differentiate w.r.t. 'x' if
$$y = \sin x - \cos x + \ln \left(\frac{1}{x}\right)$$

(a)
$$\frac{dy}{dx} = \cos x - \sin x + \frac{1}{x}$$

(b)
$$\frac{dy}{dx} = \cos x + \sin x + \frac{1}{x}$$

$$(c) \frac{dx}{dx} = \cos x + \sin x - \frac{1}{x}$$

Answer Key

Q.1 d	Q.2 b	Q.3 c	Q.4 b	Q.5 c
Q.6 b	Q.7 b	Q.8 c	Q.9 d	Q.10 d
Q.11 a	Q.12 b	Q.13 d	Q.14 a	Q.15 c