Physicsaholics

DPP – 5 (Basic Maths)

Video Solution on Website:- https://physicsaholics.com/home/courseDetails/36

Video Solution on YouTube:- https://youtu.be/LI7UgwqzscY

Written Solution on Website:- https://physicsaholics.com/note/notesDetalis/70

Q 1. y = x ln x , Find $\frac{dy}{dx}$?

(a) x + ln x (b) 1 + ln x (c) ln x (d) x + x ln x

Q 2. y = Sin x . Cos x , Find $\frac{dy}{dx}$?

(a) Sin 2x (b) Cos 2x (c) - Cos 2x (d) - Sin 2x

Q3 y = $(Sin\, x + \cos x)^2$, Find $\frac{dy}{dx}$?

(a) Sin 2x (b) Cos 2x (c) 2Sin 2x (d) 2 Cos 2x

Q 4. Differentiate y = $\ln x^2$ w.r.t. 'x':

(a) $\frac{dy}{dx} = \frac{1}{x}$ (b) $\frac{dy}{dx} = 2$

(c) $\frac{dy}{dx} = \frac{2}{x}$ (d) None of these

Q 5. Differentiate y = e^{x^2} w.r.t. 'x':

(a) $\frac{dy}{dx} = 2xe^{x^2}$ (b) $\frac{dy}{dx} = e^{x^2}$

(c) $\frac{dy}{dx} = 2e^{x}$ (d) None of these

Q 6. Differentiate y = ae^x w.r.t. 'x'(where a = constant):

(a) $\frac{dy}{dx} = axe^x$ (b) $\frac{dy}{dx} = a$

(c) $\frac{dy}{dx} = ae^x$ (d) None of these

Q 7. Differentiate $F(x) = (x^2 - 1)(x + 5)$, w.r.t. 'x':

(a) $F'(x) = 3x^2 + 10x - 1$

(b) $F'(x) = x^2 - 10x - 1$

(c) $F'(x) = (2x)(x)$

(d) None of these

Q 8. Differentiate $F(x) = \sin x \cos x$, w.r.t. 'x':

(a) $F'(x) = 1$

(b) $F'(x) = \cos^2 x - \sin^2 x$

(c) $F'(x) = \cos x - \sin x$

(d) None of these

Q 9. Differentiate $y = x^2 \ln x$ w.r.t. 'x':

(a) $\frac{dy}{dx} = x(2\ln x + 1)$ (b) $\frac{dy}{dx} = \ln x + 2x$

(c) $\frac{dy}{dx} = x^2 \ln x + 1$ (d) None of these

Q 10. Differentiate $y = \frac{e^x}{x}$, w.r.t. 'x':

(a) $\frac{dy}{dx} = -\frac{e^x}{x^2}$ (b) $\frac{dy}{dx} = \frac{e^x}{x^2}(x+1)$

(c) $\frac{dy}{dx} = \frac{e^x}{x^2}(x-1)$ (d) None of these

Q 11. Differentiate $y = \frac{\sin x}{\cos x}$, w.r.t. 'x':

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

(c) $\frac{dy}{dx} = \sec^2 x$ (d) None of these

Q 12. Differentiate $y = \frac{x}{\ln x}$, w.r.t. 'x':

(a) $\frac{dy}{dx} = 1$ (b) $\frac{dy}{dx} = \frac{\ln x - 1}{(\ln x)^2}$

(c) $\frac{dy}{dx} = \frac{1}{(\ln x)^2}$ (d) None of these

Q 13. Differentiate $y = \frac{6x^2}{2-x}$, w.r.t. 'x':

(a) $\frac{dy}{dx} = \frac{24x - 6x^2}{(2-x)^2}$ (b) $\frac{dy}{dx} = \frac{6x^3 - 12x^2 + 24x}{(2-x)^2}$

(c) $\frac{dy}{dx} = \frac{24x}{(2-x)^2}$ (d) None of these

Q 14. Find double derivative of $y = x^3 - x^2 + x - 1$, w.r.t. 'x'

(a) $\frac{d^2y}{dx^2} = 3x^2 - 2x + 1$ (b) $\frac{d^2y}{dx^2} = 6x - 2$

(c) $\frac{d^2y}{dx^2} = 6$ (d) None of these

Q 15. Find value of $\frac{d^2y}{dx^2}$ at $x = \frac{\pi}{2}$, if $y = \sin x$:

(a) $\frac{d^2y}{dx^2} = -1$ (b) $\frac{d^2y}{dx^2} = 1$

(c) $\frac{d^2y}{dx^2} = zero$ (d) $\frac{d^2y}{dx^2} = 2$

Q 16. Find $\frac{d^2y}{dx^2}$, if $y = e^x$:

(a) $\frac{d^2y}{dx^2} = xe^x$ (b) $\frac{d^2y}{dx^2} = e^x + 1$

(c) $\frac{d^2y}{dx^2} = e^x$ (d) None of these

Q 17. Find $\frac{d^2y}{dx^2}$, if $y = \ln x$:

(a) $\frac{d^2y}{dx^2} = -x^2$ (b) $\frac{d^2y}{dx^2} = -\frac{1}{x^2}$

(c) $\frac{d^2y}{dx^2} = \frac{1}{x^2}$ (d) None of these

Q18. If $y = x^x$, $\frac{dy}{dx} = ?$

(a) x^x (b) $x^x(1 + \ln x)$ (c) x^{x-1} (d) x^{x+1}

Q19. If $x^3 + y^3 = 2xy$, find value of $\frac{dy}{dx}$ at (1,1) ?

(a) 1 (b) -1 (c) 2 (d) 3

Q20. If $2x = t^2$, $y = t^3 + t^2$. Find $\frac{dy}{dx}$ at t = 1 ?

(a) 2 (b) 3 (c) 4 (d) 5

Q21. $y = \sqrt{\ln x}$, Find $\frac{dy}{dx}$?

(a) $\frac{1}{2(\ln x)^{3/2}}$ (b) $\frac{1}{2x(\ln x)^{1/2}}$ (c) $\frac{-1}{2(\ln x)^{3/2}}$ (d) $\frac{1}{(\ln x)^{3/2}}$

Answer Key

Q.1 b	**Q.2 b**	**Q.3 d**	**Q.4 c**	**Q.5 a**
Q.6 c	**Q.7 a**	**Q.8 b**	**Q.9 a**	**Q.10 c**
Q.11 c	**Q.12 b**	**Q.13 a**	**Q.14 b**	**Q.15 a**
Q.16 c	**Q.17 b**	**Q.18 b**	**Q.19 b**	**Q.20 d**
Q.21 b				