Yakeen NEET 2.0 2026

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Basic Maths & Calculus (Mathematical Tools)

DPP: 9

Q1 $y = 2t(3-t)$ then find $\frac{dy}{dt}$.

Q2 $y = 2t(3-t)$ then find $\frac{dy}{dt}$.

Q3 If $y = B\cos(kx)$ then $\frac{dy}{dx}$ will be
(A) $-B\sin(kx)$
(B) $-Bx\cos(kx)$
(C) $-Bk\sin(kx)$
(D) $B\sin(kx)$

Q4 If $y = (\sin x)^2$ then find $\frac{dy}{dx}$
(A) $2\sin x$
(B) $2\cos x$
(C) $2\sin x \cdot \cos x$
(D) $2\cos^2 x$

Q5 Given $(ax+b)^2$ then find $\frac{dy}{dx}$
(A) $2(ax+b)$
(B) $ax+b$
(C) $(ax-b)$
(D) $2a(ax+b)$

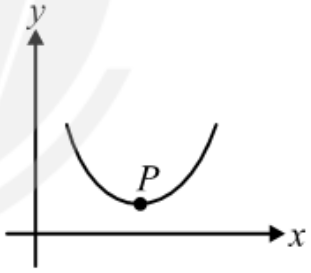
Q6 If $\ell + r = 12$ here ℓ is length of cylinder and r is radius of cylinder then find maximum value of volume of cylinder
(A) 156π (B) 350π
(C) 256π (D) 250π

Q7 Find out minimum/maximum value of $y = 2x^3 - 15x^2 + 36x + 11$ also find out those points where value is minimum/maximum.
(A) max=39 at x=2 , min=39 at x=-2
(B) max=39 at x=3 , min=38 at x=2
(C) max=39 at x=2 , min=38 at x=3
(D) max=39 at x=2 , min=38 at x=-2

Q8 If $y = \sin^3(3x^3), \frac{dy}{dx}$ will be
(A) $\cos^3(3x)^3$
(B) $\sin^3(9x^2)$
(C) $27x^2\sin^2(3x^2)\cos(3x^3)$
(D) $3\sin^2(3x^3)\cos(3x^3)$

Q9 If $y = e^{-\alpha_x}$, then find double differentiation of y.
(A) $\alpha e^{-\alpha_x}$
(B) $-\alpha e^{-\alpha_x}$
(C) $e^{-\alpha x}$
(D) $\alpha^2 e^{-\alpha_x}$

Q10 At point P, the value of slope is;



(A) Zero (B) Positive
(C) Negative (D) Infinite

Q11 If $x = 2\cos t - \cos 2t, y = 2\sin t - \sin 2t$, then at $t = \frac{\pi}{4}, \frac{dy}{dx} =$
(A) $\sqrt{2}+1$
(B) $\sqrt{2+1}$
(C) $\frac{\sqrt{2+1}}{2}$
(D) None of these

Q12 If radius of solid sphere is increasing at a rate of 2 $\mathrm{cm/sec}$, then find rate of increase in its surface area when its radius is $3\ \mathrm{cm}$:

(A) $24\pi \mathrm{cm}^2/\mathrm{s}$

(B) $48\pi \mathrm{cm}^2/\mathrm{s}$

(C) $12\pi \mathrm{cm}^2/\mathrm{s}$

(D) $6\pi \mathrm{cm}^2/\mathrm{s}$

Q13 If y = $2\sin^2\theta + \tan\theta$ then $\frac{dy}{d\theta}$

(A) $4\sin\theta\cos\theta + sec\theta\tan\theta$

(B) $2\sin 2\theta + sec^2\theta$

(C) $4\sin\theta + sec^2\theta$

(D) $2\cos^2\theta + sec^2\theta$

Q14 Find derivative of $y = (x^3 + 1)^2$

(A) $(x^3 + 1)(3x^2)$ (B) $2(x^3 + 1)$

(C) $2(3x^2)$ (D) $2(x^3 + 1)(3x^2)$

Q15 A metallic disc is being heated. Its area A (in m^2) at any time t (in sec) is given by $A = 4t^2 + 2t$. Calculate the rate of increase in area at $t = 4$ sec.

(A) 72 m^2/sec (B) 72 m^2

(C) 34 m^2/sec (D) 34 m^2

Q16 $\frac{d}{dx}\left(e^x\right)$ = ?

(A) e^x (B) 0

(C) 1 (D) None of these

Q17 If $y = e^{-\alpha x}$, then find double differentiation of y.

(A) $\alpha e^{-\alpha x}$

(B) $-\alpha e^{-\alpha x}$

(C) $e^{-\alpha x}$

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

Q18 Differentiate following w.r.t. 'x' ($\sin 2x \cos 3x$).

(A) $-3\sin 2x.\sin 3x + 2\cos 3x.\cos 2x$

(B) $3\sin 2x.\sin 2x + 2\sin 3x.\cos x$

(C) $2\sin 2x.\sin 3x + 2\sin x.\cos 3x$

(D) None of these

Answer Key

Q1	
Q2	$6 - 4t$
Q3	(C)
Q4	(C)
Q5	(D)
Q6	(C)
Q7	(C)
Q8	(C)
Q9	(D)
Q10	(A)
Q11	(A)
Q12	(B)
Q13	(B)
Q14	(D)
Q15	(C)
Q16	(A)
Q17	(D)
Q18	(A)