Maths

Question: $\int_{-\pi}^{\pi} \frac{2y(1+\sin y)}{1+\cos^2 y}$
Options:
(a) π^3
(b) π^2
(c) π
(d) π^4
Answer: (b)

Question: $y(1) = 1$ find
$$\lim_{t \to x} \frac{t^2 f(x) - x^2 f(t)}{(t-x)}$$
Options:
(a) 8
(b) 16
(c) 24
(d) 32
Answer: (c)

Question: If the function $f(x) = \frac{\sin 3x + \alpha \sin x - 3\beta \cos 3x}{x^3}, x \in R,$ is continuous at x = 0, then f(0) is
Options:
(a) 2
(b) -2
(c) 4
(d) -4
Answer: (d)

Question:
$$m = \frac{1}{\sqrt{1}+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} \cdots \frac{1}{\sqrt{99}} + \frac{1}{\sqrt{100}}$$
$$n = \frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} \cdots \frac{1}{99.100}$$
Find $2m + n$
Options:
(a) 16.99
(b) 17.99

(c) 19.99
(d) 18.99
Answer: (d)

Question: If the length of focal chord of $y^2 = 12x$ is "l" and if the distance of the focal chord from origin is d then ld^2
Options:
(a) 102
(b) 104
(c) 106
(d) 108
Answer: (d)

Question: $Ax^2 + bx + c$, taking the value of a, b, c from the set $\{1, 2, 3, 4, 5, 6, 7, 8\}$ so that it has repeated roots find probability of it.
Options:
(a) 1/64
(b) 1/32
(c) 1/16
(d) 1/8
Answer: (a)

Question: No. of ways by which sum of the number become 16 by throwing 4 dice
Options:
(a) 120
(b) 125
(c) 130
(d) 135
Answer: (b)

Question: ABCD is a rectangle of sides of length 4 and 2 which is inscribed in rectangle PQRS of area of PQRS is min find $(a+b)^2$ where a and b are sides of rectangle pqrs
Options:
(a) 36
(b) 72
(c) 108
(d) 240
Answer: (b)

Question: $(1 + 2x - 3x^3)\left(\left(\frac{3}{2}x^2 - \frac{1}{3x}\right)\right)^9$ Constant term in the expansion of
Options:
(a) 1
(b) 1/4
(c) 1/2
(d) 3/4
Answer: (c)

Question: $y = x^2 - 5x$
$y = 7x - x^2$

Find area bounded by the curve
Options:
(a) 36
(b) 72
(c) 108
(d) 240
Answer: (b)

Question: If $\frac{dy}{dx} + 2y = \sin 2x$ and $y(0) = \frac{3}{4}$, then $y\left(\frac{\pi}{8}\right)$ is equal to
Options:
(a) $e^{\frac{\pi}{8}}$
(b) $e^{\frac{\pi}{6}}$
(c) $e^{\frac{-\pi}{4}}$
(d) None
Answer: (c)

Question: f(x)=x⁵+2x³+3x+1
g(x) such that g(f(x))=x for all x
 Find g(7)/g'(7)
Options:
(a) 1/4
(b) 1/7
(c) 1/14
(d) 1/8
Answer: (c)

Question: Suppose $\theta \in \left[0, \frac{\pi}{4}\right]$ is a solution at 4cosθ - 3sinθ = |then cosθ is equal to
Options:
(a) $\frac{6-\sqrt{6}}{\left(3\sqrt{6}-2\right)}$
(b) $\frac{4}{\left(3\sqrt{6}+2\right)}$
(c) $\frac{4}{\left(3\sqrt{6}-2\right)}$
(d) $\frac{6-\sqrt{6}}{\left(3\sqrt{6}+2\right)}$
Answer: (c)

Question: Lines parallel to coordinate axes passing through (3,2) are tangents to a unit circle which is closer to origin. Find the shortest distance between circle and (5,5)
Answer: 4

Question: $Sinx + 3x - \frac{2}{\pi}(x^2 + x)$ Check if f is increasing and f' is decreasing $\left(0, \frac{\pi}{2}\right)$
Answer: f(x) is increasing and f'(x) is decreasing