

OSONE ACADEMY

No.1 Training Institution For NEET| AIIMS | IIT JEE | CLAT | NATA | CA

Name:

Time:

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Mathematics Paper

If α,β are roots of equation $7x^2 - 3x + 2 = 0$ then find the value of $\frac{\alpha}{1-\alpha^2} + \frac{\beta}{1-\beta^2}$ 1.

- $(1) \frac{7}{24}$
- (3) $\frac{24}{5}$
- $(4) \frac{24}{7}$

If \vec{a} , \vec{b} , \vec{c} are three vectors such that $|\vec{a}| = 2$, $|\vec{b}| = 4$, $|\vec{c}| = 4$, $|\vec{c}| = 4$, $|\vec{c}| = 6$. $|\vec{c}| = 6$. $|\vec{c}| = 6$. $|\vec{c}| = 6$. 2.

If the line x + 2y = 3 cuts a chord of length r unit with the circle $x^2 + y^2 = r^2$ then find r^2 3.

- $(1) \frac{12}{5}$

- $(4) \sqrt{\frac{12}{5}}$

Find the coefficient of x4 in the expansion of $(1+x+x^2+x^3)^6$

- (1) 100
- (2) 110
- (4) 125

If the mean and standard deviation of 5, 3, 7, a, b are 5 and 2 respectively, then a and b are roots of equation.

- $(1) x^2 10x + 18 = 0$
- $(2) x^2 20x + 18 = 0$
- $(3) x^2 20x + 19 = 0$
- $(4) x^2 10x + 19 = 0$

There are three section A, B, C in a paper each section having 5 questions. In how many ways a student can solve 6. exactly 5 questions taken at least one question from each section.

8.

(2) $2^{15}i$ (3) -2^{15} (4) -2^{15} If the lines x - y = a and x + y = b are tangents for $y = x^2 - 3x + 2$ then $\frac{a}{b} = a$ Let $y_1 = \tan^{-1} \left(\frac{\sqrt{1 + x^2} - 1}{x^2} \right)$ Let $y_1 = \tan^{-1} \left(\frac{\sqrt{1 + x^2} - 1}{x} \right)$ and $y_2 = \tan^{-1} \left(\frac{2x\sqrt{1 + x^2}}{1 - 2x^2} \right)$ then $\frac{dy_1}{dy_2} = \frac{dy_1}{dy_2} = \frac{dy_2}{dy_2} = \frac{dy_2}{dy_2} = \frac{dy_1}{dy_2} = \frac{dy_2}{dy_2} = \frac{dy_2$ 9.

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

10. If a G.P. sum of 2^{nd} , 3^{rd} and 4^{th} term is 3 and that of 6^{th} , 7^{th} and 8^{th} term is 243 then S_{50} =

- $(1) \frac{3^{50}+1}{26}$
- $(2) \ \frac{3^{50}-1}{13}$
- (3) $\frac{3^{50}-1}{26}$
- $(4) \frac{3^{49}-1}{26}$

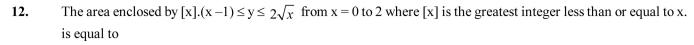
 $\int \frac{\cos \theta}{7 + \sin \theta - 2\cos^2 \theta} d\theta$ is equal to

(1) $\frac{2}{\sqrt{39}} \tan^{-1} \left(\frac{2 \sin \theta + 1}{\sqrt{39}} \right) + C$

(2) $\frac{2}{\sqrt{39}} \tan^{-1} \left(\frac{4 \sin \theta + 1}{\sqrt{39}} \right) + C$

(3) $\frac{4}{\sqrt{39}} \tan^{-1} \left(\frac{4 \sin \theta + 1}{\sqrt{39}} \right) + C$

(4) $\frac{4}{\sqrt{39}} \tan^{-1} \left(\frac{2 \sin \theta + 1}{\sqrt{39}} \right) + C$



$$(1) \frac{8\sqrt{2}}{3} + \frac{1}{2}$$

(2)
$$\frac{8\sqrt{2}}{3}$$

(3)
$$\frac{8\sqrt{2}}{3} - \frac{1}{2}$$

$$(4) \frac{8}{3} - \frac{1}{\sqrt{2}}$$

13. If
$$x + a = y + b + 1 = z + c$$
 then the value of
$$\begin{vmatrix} x & a+y & a+x \\ y & b+y & b+y \\ z & c+y & c+z \end{vmatrix}$$
 is

- (1) y (a b)
- (2) y(b-c)
- (3) y(c a)
- (4)0

- If $\log_{\frac{1}{7^2}} x + \log_{\frac{1}{7^3}} x + \log_{\frac{1}{7^4}} x + \dots = 20$ times = 460 then x = ? 14.
- A function $f: A \rightarrow B$ where $A = \{a, b, c\}, B = \{1, 2, 3, 4\}$. How many function can be defind from A to B wheich are 15. not one-one such that $2 \in f(A)$
- If the system of equations x+y+z=0, $x+3y+k^2z=0$ and x+2y+z=0 have a non zero solution then the value 16.

of
$$y + \frac{x}{z}$$
 is

(1) 1

(2)0

(3) -1

- If y = mx + C is a common tangent of circle $x^2 + y^2 = 3$ and hyperbola $\frac{x^2}{64} \frac{y^2}{100} = 1$ then which of the following 17. statement is true:
 - (1) 8m = 4
- $(2) 61C^2 = 492$
- $(3) 4C^2 = 369$
- (4) 8m + 5 = 0

