



## MATHS

### BOOKS - JEE MAINS PREVIOUS YEAR

#### B. Arch 2021 (A)

#### Question

1. If  $\vec{a}$ ,  $\vec{b}$ ,  $\vec{c}$  are vectors such that  $|\vec{b}| = |\vec{c}|$  then

$$\left\{ \left( \vec{a} + \vec{b} \right) \times \left( \vec{a} + \vec{c} \right) \right\} \times \left( \vec{b} \times \vec{c} \right) \cdot \left( \vec{b} + \vec{c} \right) =$$
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2. The locus of the midpoint of the chord of the circle  $x^2 + y^2 = 4$  which subtends a right angle at the origin is?



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3. Area of the triangle formed by the complex number  $z$ ,  $iz$  and  $z+iz$  is \_\_\_\_\_



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4. The number of divisors of the form  $(4n + 2)$  of the integer 240 is



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5. 17. If  $x > 1, y > 1, z > 1$  are in G.P, then  $\frac{1}{1 + \ln x}, \frac{1}{1 + \ln y}, \frac{1}{1 + \ln z}$  are in



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6. Given  $x = cy + bz, y = az + cx, z = bx + ay$  where  $x, y$  and  $z$  are not all zero, then  $a^2 + b^2 + c^2 + 2abc =$   
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7. The minimum number of times a fair coin needs to be tossed, so that the probability of getting at least two heads is at least 0.96, is \_\_\_\_\_.



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8. The DE representing the family of curves  $y^2 = (2c + x^{2021})$  where  $c$  is the positive parameter is of?



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9. Find the equation of the normal to the curve  $x^2 = 4y$  which passes through the point (1, 2).



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10. If  $A + B + C = 180^\circ$  then find  
 $\tan A + \tan B + \tan C =$



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11. If  $z_1$  and  $z_2$  unimodular complex number that satisfy  
 $z_1^2 + z_2^2 = 4$  then  $(z_1 + \overline{z_1})^2(z_2 + \overline{z_2})^2$  is equal to



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12. A person writes letters to 6 friends and addresses a corresponding envelope. The number of ways in which 5 letters can be placed in the wrong envelope is?



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13.  $\int (e^{\log x} + \sin x) \cos x dx$



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