find my college

MHT CET 2024 May 16 Shift 1 & 2 Question Paper

Ques 1. A vector parallel to the line of intersection of the planes overline r *(3 hat i - hat j + hat k)=1 r. (hat i +4 hat j -2 hat k)=2 is
A - 2 hat i +7 hat j +13 hat k
B 2 hat i -7 hat j +13 hat k
C - hat 1 +4 hat j +7 hat k
D hat i -4 hat j +7 hat k

Ans. A

Ques 2. The angle between the lines, whose direction cosines l, m, n satisfy the equations l + m + n = 0 and 2 l^2 + 2 m^2 -n^2 = 0, is
A 60°
B 180°
C 90°
D 30°

Ans. B

Ques 3. If X is a random variable with p.m.f. as follows.
P(X = x) = 5/16, x = 0,1 = kx/48, x = 2, = 1/4, x = 3 then E(x)
A 1.1875
B 1.3125
C 1.5625
D 0.5625

Ans. B

Ques 4. The surface area of a spherical balloon is increasing at the rate 2 cm^2 / sec. Then rate of increase in the volume of the balloon is, when the radius of the balloon is 6 cm.
A 4 cm^3 / sec
B 16 cm^3 / sec
C 36 cm^3 / sec
D 6 cm^3 / sec

Ans. D

Ques 5. If f(x) = 2 x3-15 x^2-144 x -7, then f(x) is strictly decreasing in
A (-8, 3)
B (-3,8)
C (3,8)
D (-8,-3)

Ans. B

Ques 6. If $y= (\sin x)^y$. then dy/dx is
A. $(y^2 \cot x)/(1 - y\log(\sin x))$
B. $(y^2 \cot x)/(1 - y\log(x))$
C. $(y^2 \cot x)/(1 + y\log(\sin x))$
D. $(y^2 \cot x)/(1 + y\log(x))$

Ans. A

Ques 7. If, $\sin^{-1} x + \cos^{-1} y = 3\pi/10$ then the value of $\cos^{-1} x + \sin^{-1} y$ is
A π/10
B 7π/10
C 9π/10
D 3π/10

Ans. B

Ques 8. $\sin^{-1}[\sin(-600°)] + \cot^{-1}(-\sqrt{3}) =$

find my college

A π/6
B π/4
C π/3
D 7π/6

Ans. A

Ques 9. If A = $\begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & a & 1 \end{bmatrix}$ **and** $A^{-1} = \frac{1}{2}\begin{bmatrix} 1 & -1 & 1 \\ -8 & 6 & 2c \\ 5 & -3 & 1 \end{bmatrix}$**, then values of a and c are respectively**

A. ½, ½
B. -1, 1
C. 2, -½
D. 1, -1

Ans. D

Ques 10. The p.m.f of random variate X is P(X) = $\begin{cases} \frac{2x}{n(n+1)}, & x = 1,2,3, \dots \dots, n \\ 0, & \text{otherwise} \end{cases}$**, Then E(X) =**

A. (n + 1)/3
B. (2n + 1)/3
C. (n + 2)/3
D. (2n - 1)/2

Ans. B