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MATHS

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPER SET 10

Exercise

1. CHOOSE the correct answer from the following alternative : the domain for which the functions f(x)=$3x^2 - 2x$ and g(x)=3(3x-2) are equal, will be -

A. {1,2/3}

B. {1,3}

C. {2/3,3}

D. {2/3,0}

Answer:

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2. choose the correct alternative :(ii) state which of the foll. Is the value of $\tan\left(\left(\frac{1}{3}\right)\left(\tan^{-1}x+\tan^{-1}\left(\frac{1}{x}\right)\right)\right)$ (x>0)?

A. $\frac{1}{\sqrt{3}}$

B. $\sqrt{3}$

C. 1

D. 0

Answer:

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3. choose the correct answer from the given alternative : if A ia a square matrixof oreder 3 x 3, then the value of |KA| will be-

A. k|A|

B. $K^2|A|$

C. $K^3|A|$

D. 3K|A|

Answer:

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4. choose the correct alternative : (iv) the deriavtive of x^2 w.r.t log x is

A. $2x^2$

B. 2

C. 2x

D. $2x^3$

Answer:

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5. choose the correct alternative : (v) the value of $\int_{-1}^{1} |x| dx$ is

A. 1

B. 2

C. 4

D. 44228

Answer:

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6. choose the correct alternative :(viii) the perpendicular distance of the point(1,2,3,) from the x-axis is -

A. $\sqrt{5}$ units

B. $\sqrt{13}$ units

C. 9 units

D. 13 units

Answer:

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7. Three events A,B and C are mutually exclusive and exhaustive , if P(A)=3/5 and P(B)=1/6, then the value of P(C) is

A. 23/30

B. $\frac{7}{30}$

C. $\frac{1}{10}$

D. $\frac{9}{10}$

Answer:

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8. If f(x) is the probability distribution function of a random variable X and X can assume only two values x_1 and x_2 then the value of $f(x_1) + f(x_2)$ is

A. ≥ 1

B. ≤ 1

C. ≥ 0

D. 1

Answer:

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9. answerer any one of the foll. :(ii) if two angles of a triangle are $\tan^{-1}\left(\frac{1}{2}\right)$ and $\tan^{-1}\left(\frac{1}{3}\right)$, then find the third angle.

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10. (b) answer any one of the foll.: (i) prove without expanding $\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix} = 0$ wher w is an imaginary cube root of unity.

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11. answer any three of the foll. : (i) evaluate : $\lim_{x \to \infty} \frac{e^{ax} + e^{\beta x} - 2}{x}$

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12. find dy/dx, when $e^{xy} - 4xy = 4$

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13. evaluate: $\int \frac{dx}{\sin^2 x \cos^2 x}$

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14. Show that , the equation of all circles touchung the y -axis at the origin is $2xy\frac{dy}{dx} = y^2 - x^2$.

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15. Find the interval in which the function $f(x) = x^x (x > 0)$ is decreasing.

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16. if a and b are any two constants, then prove that $Var(aX + b) = a^2 Var(X)$.

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17. prove that , $\tan\left(2\tan^{-1}\sqrt{\frac{1+\cos\theta}{1-\cos\theta}}\right) + \tan\theta$ =0

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18. answer the following : (ii) prove that, $\begin{vmatrix} 2ab & a^2 & b^2 \\ a^2 & b^2 & 2ab \\ b^2 & 2ab & a^2 \end{vmatrix}$ =- $\left(a^3+b^3\right)^2$

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19. answeer the following : (i) if $y\sqrt{x^2+1}=\log\left(\sqrt{x^2+1}-x\right)$, show that ,$\left(x^2+1\right)\frac{dy}{dx}+xy+1=0$

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20.

$x=a(\theta-\sin\theta), y=a(1-\cos\theta), showt\hat{}, 2y\frac{d^2y}{dx^2}+\cos ec^2\frac{\theta}{2}=0$

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21. answer the following: (ii)evaluate: $\int \frac{e^x(x-4)}{(x-2)^3} dx$

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22. evaluate : $\int \frac{dx}{x^4+x^2+1}$

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23. answer the following : (iii) solve: $\frac{dy}{dx} = 1 + e^{2x-y}$,given y=2 when x=2

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24. evaluate : $\int_{-1}^{2} |1-x^2| dx$

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25. Evaluate (with the help of definite integral):

$$\lim_{n\to\infty}\left\{\left(1+\frac{1}{n}\right)\left(1+\frac{2}{n}\right)\ldots\left(1+\frac{n}{n}\right)\right\}^{\frac{1}{n}}$$

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26. a problem on mathematics is given to three students A,B,C whose probabilities of solving it are 1/3,2/5and 3/4 . Find the probability that the problem is solved.

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27. the overall percentage of failures in a certain examination is 40 what is the probability that out of a group of 6 candidates at least 4 passed the examination ?

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28. Prove that the equation of the palne which passes through the point (-1,3,2) and is perpendicular to the planes x+2y+2z=5 and 3x+3y+2z=8 is 2x-4y+3z+8=0.

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