PART - D

IV. Answer all the questions : **7×5=35**

41. a) If f, g : R → R are defined by f(x) = | x | + x and g(x) = | x | - x, find gof and fog. **(OR)**
    b) In the set Z of integers, define mRn if m - n is a multiple of 12. Prove that R is an equivalence relation.

42. a) Solve the equation $-x^2 + 3x - 2 \geq 0$ **(OR)**
    b) State and prove Sine formula.

43. a) Prove that in any ΔABC, $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$, where s is the semi perimeter of Δ ABC. **(OR)**
    b) Do the limit of the function $\frac{\sin(x-[x])}{x-[x]}$ exist as $x \to 0$? State the reasons for your answer.

44. a) Find the value of $\sqrt[3]{126}$ correct to two decimal places. **(OR)**
    b) For the given base curve y = sinx, draw y = ½ sin2x

45. a) Prove that $\begin{vmatrix} 1 & x^2 & x^3 \\ 1 & y^2 & y^3 \\ 1 & z^2 & z^3 \end{vmatrix} = (x-y)(y-z)(z-x)(xy+yz+zx)$ **(OR)**
    b) Show that the vectors $5\hat{i}+6\hat{j}+7\hat{k}$, $7\hat{i}-8\hat{j}+9\hat{k}$, $3\hat{i}+20\hat{j}+5\hat{k}$ are coplanar.

46. a) Find $\frac{d^2y}{dx^2}$ if $x^4 + y^4 = 16$. **(OR)**
    b) If the equation $\lambda x^2 - 10xy + 12y^2 + 5x - 16y - 3 = 0$ represents a pair of straight lines, find (i) the value of λ and the separate equations of the lines. (ii) Angle between the lines (iii) point of intersection of the lines

47. a) Evaluate the integral $\int \frac{2x+1}{\sqrt{9+4x-x^2}}dx$ **(OR)**
    b) A consulting firm rents car from three agencies such that 50% from agency t, 30% from agency M and 20% from agency N. If 90% of the cars from L, 70% of cars from M and 60% of the cars from N are in good conditions.
    i) What is the probability that the firm will get a car in good condition?
    ii) If a car is in good condition, what is the probability that it has come from agency N?

FIRST REVISION TEST - 2025

Standard - XI

MATHEMATICS

Reg.No. | | | | | | |

Time: 3.00 hrs. *Marks: 90*

PART - A

I. Choose the correct answer: **20×1=20**

1. Let A and B be subsets of the universal set N, the set of natural numbers. Then A'∪ [(A∩B)∪B'] is
   a) A b) B c) A' d) N.

2. If the function f : [-3,3] → s defined by f (x) = x^2 is onto, then S is
   a) [-3, 3] b) R c) [-9, 9] d) [0, 9]

3. Two items are chosen from a lot containing twelve items of which four are defective, then the probability that atleast one of the item is defective
   a) $\frac{19}{33}$ b) $\frac{17}{33}$ c) $\frac{23}{33}$ d) $\frac{13}{33}$

4. $\int \frac{\sqrt{\tan x}}{\sin 2x}dx$ is
   a) $\sqrt{\tan x} + c$ b) $2\sqrt{\tan x} + c$ c) $1/4\sqrt{\tan x} + c$ d) $1/2\sqrt{\tan x} + c$

5. $\int \frac{dx}{e^x - 1}$ is
   a) $\log|e^x + 1| - \log|e^x| + c$ b) $\log|e^x - 1| - \log|e^x| + c$
   c) $\log|e^x| - \log|e^x - 1| + c$ d) $\log|e^x| + \log|e^x - 1| + c$.

6. For the function f (x) = $\begin{cases} x+2, & x>0 \\ x-2 & x<0 \end{cases}$
   a) $\lim_{x\to 2^-} f(x) = -1$ b) $\lim_{x\to 0} f(x)$ does not exist c) $\lim_{x\to 0^-} f(x) = -1$ d) $\lim_{x\to 0^+} f(x) = 1$

7. If f(x) = $\begin{cases} 2a-x, & \text{for } -a<x<a \\ 3x-2a, & \text{for } x \geq a \end{cases}$ Then which one the following is true?
   a) f(x) is continuous for all x in R b) f(x) is differentiable for all x ≥ a
   c) f(x) is not differentiable at x = a d) f(x) is discontinuous at x = a

8. The maximum value of $4\sin^2 x + 3\cos^2 x + \sin\frac{x}{2} + \cos\frac{x}{2}$ is
   a) $4+\sqrt{2}$ b) $3+\sqrt{2}$ c) 9 d) 4

9. The principal value of $\text{Cosec}^{-1}(-2)$ is
   a) $\frac{-\pi}{3}$ b) $\frac{-\pi}{6}$ c) $\frac{\pi}{6}$ d) $\frac{\pi}{3}$

10. If $\vec{a}$ and $\vec{b}$ include an angle 120° and their magnitudes are 2 and $\sqrt{3}$ then $\vec{a}.\vec{b}$ is equal to
 a) $\frac{-\sqrt{3}}{2}$ b) $\sqrt{3}$ c) $-\sqrt{3}$ d) 2
11. The number of 5 digit numbers all digits of which are odd is
 a) 5^5 b) 5^6 c) 625 d) 25
12. The HM of two positive numbers whose AM and GM are 16, 8 respectively is
 a) 5 b) 4 c) 6 d) 10
13. The line $\frac{x}{a}-\frac{y}{b}=0$ has the slope 1, if
 a) a = b b) only for a = 1, b = 1 c) a > b d) a < b
14. The expansion of $(1-x)^{-2}$ is
 a) $1 - x + x^2 - \ldots\ldots$ b) $1 + x + x^2 + \ldots\ldots$ c) $1 - 2x + 3x^2 - \ldots\ldots$ d) $1 + 2x + 3x^2 + \ldots\ldots$
15. The image of the point (2, 3) in the line y = -x is
 a) (-3, -2) b) (-3, 2) c) (-2, -3) d) (3, 2)
16. If the points (x, -2), (5, 2), (8, 8) are collinear then x is equal to
 a) 1/3 b) 1 c) 3 d) -3
17. If $\vec{a}=\hat{i}+\hat{j}+\hat{k}$, $\vec{b}=2\hat{i}+x\hat{j}+\hat{k}$, $\vec{c}=\hat{i}-\hat{j}+4\hat{k}$ and $\vec{a}.(\vec{b}\times\vec{c})=70$, then x is equal to
 a) 26 b) 7 c) 10 d) 5
18. If $\frac{ax}{(x+2)(2x-3)}=\frac{2}{x+2}+\frac{3}{2x-3}$ then a =
 a) 7 b) 4 c) 8 d) 5
19. $x=\frac{1-t^2}{1+t^2}$, $y=\frac{2t}{1+t^2}$ then $\frac{dy}{dx}$ is
 a) $\frac{-x}{y}$ b) $\frac{x}{y}$ c) $\frac{y}{x}$ d) $\frac{-y}{x}$
20. The number of roots of $(x + 3)^4 + (x + 5)^4 = 16$ is
 a) 3 b) 2 c) 4 d) 0

PART - B

II. Answer any seven questions: (Ques.No.30 is compulsory) **7×2=14**

21. If n [P(A)] = 1024, n(A∪B) = 15 and n[P(B)] = 32 then find n (A∩B) = 0
22. Write the use of horizontal line test.
23. Resolve the rational expression $\frac{1}{x^2-a^2}$ into partial fractions.

24. Convert (i) 18° to radians (ii) - 108° to radians
25. If $nc_4 = 495$, what is n ?
26. Find the locus of P, that moves at a constant distant of (i) two units from the x - axis (ii) three units from the y - axis
27. Construct an m × n matrix A = [aij], where aij given by aij = $\frac{(i-2j)^2}{2}$ with m = 2, n = 3.
28. Find a direction ratio and direction cosines of the following vector $3\hat{i}+4\hat{j}-6\hat{k}$
29. Differentiate y= sin (x^2)
30. Evaluate the following with respect to x $\int\frac{1}{(3x+7)^4}dx$

PART - C

III. Answer any seven questions. Q.No.40 is compulsory. **7×3=21**

31. Find the range of $f(x)=\frac{1}{1-3\cos x}$
32. Find the value of the product: $\begin{vmatrix}\log_3 64 & \log_4 3\\ \log_3 8 & \log_4 9\end{vmatrix}\times\begin{vmatrix}\log_2 3 & \log_8 3\\ \log_3 4 & \log_3 4\end{vmatrix}$
33. Find the nearest point on the line x - 2y = 5 from the origin.
34. If x is small show that $\sqrt{\frac{1-x}{1+x}}=1-x+\frac{x^2}{2}$ (approx.)
35. Prove that $\lim\limits_{x\to 0}\frac{a^x-1}{x}$ = log a, a > 0.
36. Given that P(A) = 0.52 , P (B) = 0.43, and P(A∩B)= 0.24, find (i) $P(A\cap\bar{B})$ (ii) P(A∪B) iii) $P(\bar{A}\cap\bar{B})$.
37. Examine the continuity of the function cotx + tanx
38. If A + B= 45° then prove that (1 + tan A) (1 + tanB) = 2
39. Find the vectors of magnitude 6 which are perpendicular to both vectors $\vec{a}=4\hat{i}-\hat{j}+3\hat{k}$ and $\vec{b}=-2\hat{i}+\hat{j}-2\hat{k}$
40. Evaluate : $\int(x-3)\sqrt{x+2}\,dx$.

11th - MATHEMATICS. M. Keerthana. MSc (Maths)

I.

1. d N
2. d $[0,9]$
3. a $\frac{19}{33}$
4. a $\sqrt{\tan x}+c$
5. b $\log|e^x-1|-\log|e^x|+c$
6. b $\lim_{x\to 0} f(x)$ does not exist
7. c $f(x)$ is not differentiable at $x=a$.
8. a $4+\sqrt{2}$
9. b $-\pi/6$
10. c $-\sqrt{3}$
11. a 5^5
12. b 4
13. a $a=b$
14. d $1+2x+3x^2+\dots$
15. a $(-3,-2)$
16. c 3
17. a 26
18. a 7
19. a $-x/y$
20. c 4

21. $n(P(A))=1024=2^{10}$

$n(A)=10$,

$n(P(B))=32=2^5$

$n(B)=5$

$n(A\cup B)=n(A)+n(B)-n(A\cap B)$

$15 = 10+5-n(A\cap B)$

$\boxed{n(A\cap B)=0}$

22. 1. If the horizontal line through a point y in the co-domain doesn't meet the curve, then there will be no pre-image for y and hence the function is not onto.

23. $\frac{1}{x^2-a^2}=\frac{A}{x+a}+\frac{B}{x-a}$

$1=A(x-a)+B(x+a)$

$A=\frac{1}{2a}$, $B=-\frac{1}{2a}$.

$\frac{1}{x^2-a^2}=\frac{1}{2a(x-a)}-\frac{1}{2a(x+a)}$

24. (i) $18^\circ = 18\times\frac{\pi}{180}=\frac{\pi}{10}$

(ii) $-108^\circ=-108^\circ\times\frac{\pi}{180}=-\frac{3\pi}{5}$.

25. $nC_4=495$

$\frac{n(n-1)(n-2)(n-3)}{4\times3\times2\times1}=495$

$n(n-1)(n-2)(n-3)=495\times4\times3\times2\times1$

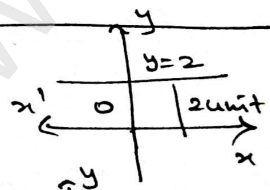
$\boxed{n=12}$

26. (i) $p(h,k)$

x-axis,

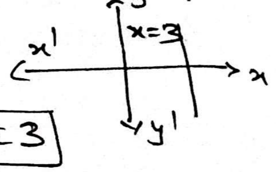
$y=\pm c$,

$\therefore c=\pm 2$



(ii) $x=\pm c$

$c=\pm 3$.



point P is $\boxed{x=\pm 3}$

27. $a_{ij}=\frac{(i-2j)^2}{2}$, $m=2, n=3$

$$A=\begin{bmatrix} 1/2 & 9/2 & 25/2 \\ 0 & 4/2 & 16/2 \end{bmatrix}$$

28. $3\hat{i}+4\hat{j}-6\hat{k}$

$r=\sqrt{9+16+36}=\sqrt{61}$

$\frac{3}{\sqrt{61}}, \frac{4}{\sqrt{61}}, \frac{-6}{\sqrt{61}}$

29. $y=\sin(x^2)$

$\frac{dy}{dx}=\cos(x^2)(2x)$

30. $\int\frac{1}{(3x+7)^4}dx$

$y'=\frac{1}{3}\frac{(3x+7)^{-4+1}}{-4+1}=\frac{-1}{9(3x+7)^3}+c$

Part - II

31. $f(x)=\frac{1}{1-3\cos x}$

$-1\le\cos x\le 1$

$-3\le 3\cos x\le 3$

$-2\le 1-3\cos x\le 4$

$(-\infty,-1/2]\cup[1/4,\infty)$

Scanned with ACE Scanner

32. $\begin{vmatrix} \log_3 64 & \log_4 3 \\ \log_3 8 & \log_4 9 \end{vmatrix} \times \begin{vmatrix} \log_2 3 & \log_8 3 \\ \log_3 4 & \log_3 4 \end{vmatrix}$

$\begin{vmatrix} 6+1 & 2+1 \\ 3+2 & 1+2 \end{vmatrix} = \begin{vmatrix} 7 & 3 \\ 5 & 3 \end{vmatrix} = 21-15=6.$

33. $2x+y=5$

$\frac{x-x_1}{a} = \frac{y-y_1}{b} = \frac{-(ax_1+by_1+c)}{a^2+b^2}$

$\frac{x-0}{2} = \frac{y-0}{1} = -\frac{(2(0)+1(0)-5)}{4+1}$

$\frac{x}{2} = \frac{y}{1} = 1 \Rightarrow (2,1)$

34. $\sqrt{\frac{1-x}{1+x}} = \sqrt{\frac{(1-x)(1-x)}{(1+x)(1-x)}} = \frac{1-x}{\sqrt{1-x^2}}$

$\Rightarrow (1-x)(1-x^2)^{-1/2} = (1-x)\left\{1+\frac{1}{2}(x^2) + \frac{\left(\frac{1}{2}\right)\left(\frac{1}{2}+1\right)}{2}(x^2)^2 \ldots\right.$

$\Rightarrow (1-x)+\frac{x^2}{2}-\frac{1x^3}{2}+\frac{3}{8}x^4 \ldots$

$\Rightarrow 1-x+\frac{x^2}{2}$ (approx)

35. $\lim_{x\to 0} \frac{a^x-1}{x} = \log a.$

$a^x = \exp(\log a^x)$

$\frac{a^x-1}{x} = \frac{e^{x\log a}-1}{x\log a} \times \log a.$

$\lim_{x\to 0} \frac{a^x-1}{x} = \lim_{y\to 0} \frac{e^y-1}{y} \times \log a$

$\Rightarrow \log a \lim_{y\to 0}\left(\frac{e^y-1}{y}\right) = \log a$

36. (i) $P(A\cap\bar{B}) = P(A) - P(A\cap B)$

$= 0.52 - 0.24 = 0.28$

(ii) $P(A\cup B) = P(A)+P(B)-P(A\cap B)$

$= 0.52+0.43-0.24$

$= 0.71$

(iii) $P(\bar{A}\cap\bar{B}) = P(\overline{A\cup B})$

$= 1-P(A\cup B)$

$= 1-0.71 = 0.29.$

37. $\tan x$ doesn't exist for odd multiple of $\pi/2$

$\cot x$ doesn't exist for even multiple of $\pi/2$

$f(x)$ is continuous in $R-\left(\frac{n\pi}{2}\right), n\in Z$

38. $A+B=45$

$B=45-A$

$(1+\tan A)(1+\tan B)$

$(1+\tan A)(1+\tan(45-A))$

$\Rightarrow (1+\tan A)\left(1+\frac{1-\tan A}{1+\tan A}\right)$

$\Rightarrow \cancel{(1+\tan A)} \times \frac{2}{\cancel{(1+\tan A)}}$

$= 2$

39. $\vec{a} = 4\hat{i}-\hat{j}+3\hat{k}$

$\vec{b} = -2\hat{i}+\hat{j}-2\hat{k}$

$|\vec{a}\times\vec{b}| = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 4 & -1 & 3 \\ -2 & 1 & -2 \end{vmatrix} = -\hat{i}+2\hat{j}+2\hat{k}$

$\pm\frac{(\vec{a}\times\vec{b})}{|\vec{a}\times\vec{b}|} = \pm\left|\frac{-\hat{i}+2\hat{j}+2\hat{k}}{3}\right|$

$= \pm 2(-\hat{i}+2\hat{j}+2\hat{k})$

40. $\int (x-3)\sqrt{x+2}\,dx$

$\Rightarrow \int (x+2-5)\sqrt{x+2}\,dx$

$= \int (x+2)^{3/2}dx - 5\int (x+2)^{1/2}dx$

$\Rightarrow \frac{2}{5}(x+2)^{5/2} - \frac{10}{3}(x+2)^{3/2}+c$

Part - C

41 (a) $f(x) = |x|+x$

$= \begin{cases} x+x=2x, & x\geq 0 \\ -x+x=0, & x<0 \end{cases}$

$g(x) = |x|-x$

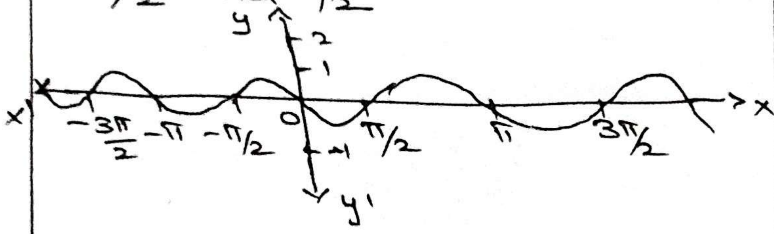
$= \begin{cases} x-x=0, & x\geq 0 \\ -x-x=-2x, & x<0 \end{cases}$

$f\circ g(x) = f(g(x)) = 0 \rightarrow (1)$

$g\circ f(x) = g(f(x)) = 0 \rightarrow (2)$

$(1) = (2)$.

value will vary between $-\frac{1}{2}$ and $\frac{1}{2}$



45(a): $\begin{vmatrix} 1 & x^2 & x^3 \\ 1 & y^2 & y^3 \\ 1 & z^2 & z^3 \end{vmatrix}$

$x=y$ $|A| = \begin{vmatrix} 1 & y^2 & y^3 \\ 1 & y^2 & y^3 \\ 1 & z^2 & z^3 \end{vmatrix}$ $R_1 \equiv R_2$

$\therefore (x-y)$ is a Factor

lly $(y-z)$ and $(z-x)$ is a Factor,

$\begin{vmatrix} 1 & x^2 & x^3 \\ 1 & y^2 & y^3 \\ 1 & z^2 & z^3 \end{vmatrix} = k(x^2+y^2+z^2) + l(xy+yz+zx)$ $(x-y)(y-z)(z-x)$

$x=0,\ y=1,\ z=2$

$\begin{vmatrix} 1 & 0 & 0 \\ 1 & 1 & 1 \\ 1 & 4 & 8 \end{vmatrix} = (5k+2l)(-1)(-1)(2)$

$4 = 10k+4l$

$\boxed{5k+2l=2}$

$x=0,\ y=-1,\ z=1$

$\begin{vmatrix} 1 & 0 & 0 \\ 1 & 1 & -1 \\ 1 & 1 & 1 \end{vmatrix} = 2k-l\,(1)(-2)(1)$

$\boxed{2k-l=-1}$ $\boxed{\begin{matrix} k=0 \\ l=1 \end{matrix}}$

$\therefore \begin{vmatrix} 1 & x^2 & x^3 \\ 1 & y^2 & y^3 \\ 1 & z^2 & z^3 \end{vmatrix} = (x-y)(y-z)(z-x)(xy+yz+zx)$

45(b) $\vec{a} = s\vec{b} + t\vec{c}$

$5\hat{i}+6\hat{j}+7\hat{k} = s(7\hat{i}-8\hat{j}+9\hat{k}) + t(3\hat{i}+20\hat{j}+5\hat{k})$

$7s+3t = 5 \rightarrow (1)$ $9s+5t=7 \rightarrow (3)$

$-8s+20t=6 \rightarrow (2)$

$s=\frac{1}{2},\ t=\frac{1}{2}$

46(a) $x^4+y^4=16$,

$y' = \dfrac{-x^3}{y^3}$

$y'' = \dfrac{-\{y^3(3x^2) - x^3(3y^2y')\}}{y^6}$

$= -\dfrac{3x^2y^3 - 3x^3y^2\left(\frac{-x^3}{y^3}\right)}{y^6}$

$= -\dfrac{3x^2(16)}{y^7} = \dfrac{-48x^2}{y^7}$

46(b) $a=\lambda,\ b=12,\ c=-3$

$h=-5,\ g=5/2,\ f=-8$.

$abc+2fgh-af^2-bg^2-ch^2=0$

$-36\lambda+200-64\lambda-75+75=0$

$\boxed{\lambda=2}$

$2x^2-10xy+12y^2=(x-2y)(2x-6y)$

$\boxed{x-2y+3=0}$ $\boxed{2x-6y-1=0}$

(ii) $(x,y) = \left(-10, \frac{-7}{2}\right)$

(iii) $\tan\theta = \left|\dfrac{2\sqrt{h^2-ab}}{a+b}\right|$

$\Rightarrow \dfrac{2\sqrt{25-24}}{2+12} = \frac{1}{7}$

$\boxed{\theta = \tan^{-1}(1/7)}$

47(a) $\displaystyle\int \frac{2x+1}{\sqrt{9+4x-x^2}}$

$\Rightarrow -\displaystyle\int \frac{4-2x}{\sqrt{9+4x-x^2}}\,dx$ $t=9+4x-x^2$

$dt = 4-2x$

$I_1 = -\displaystyle\int \frac{dt}{\sqrt{t}} = -2\sqrt{t}+c$

$I_1 = -2\sqrt{9+4x-x^2}$

$I_2 = \displaystyle\int \frac{dx}{\sqrt{9+4x-x^2}}$

$\Rightarrow \dfrac{dx}{\sqrt{-(x-2)^2-13}} = \sin^{-1}\left(\dfrac{x-2}{\sqrt{13}}\right)$

Scanned with ACE Scanner

41(b) $m-n$ is multiple of 12.

As, $m-m=0$, and $0 \times 0 = 12 \times 0$

$mRm \Rightarrow R$ is Reflexive.

$m-n = 12k \ \forall k$,

$n-m = 12(-k)$ nRm,

R is symmetric,

mRn and nRp

$$\left.\begin{array}{l} m-n = 12k \\ n-p = 12l \end{array}\right\} - m-p = 12(k+l)$$

$\therefore mRp$.

$\therefore$ It is transitive

R is an equivalence relation.

42(a) $-x^2+3x-2 \geq 0$,

$(x-1)(x-2) \leq 0$

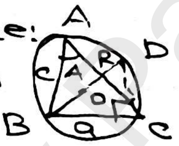
	$x-1$	$x-2$	x^2-3x+2
$(-\infty, 1)$	$-$	$-$	$+$
$(1,2)$	$+$	$-$	$-$
$(2,\infty)$	$+$	$+$	$+$

Solution $[1,2]$

42(b) Law of Sine:

$\triangle ABC$, $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C} = 2R$.

case(i) $\angle A$ is acute:



$\angle BDC = \angle BAC = A$

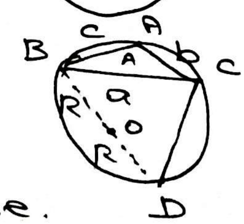
$\angle BCD = 90°$

$\sin A = \dfrac{a}{2R} = \dfrac{a}{\sin A} = 2R$

case(ii): $\angle A$ is right angle

$\dfrac{a}{\sin A} = \dfrac{BC}{\sin 90°} = \dfrac{2R}{1}$

$2R \Rightarrow \dfrac{a}{\sin A} = 2R$



case(iii): $\angle A$ is obtuse.

$\angle BDC + \angle BAC = 180°$

$\angle BCD = 90°$

$\sin \angle BDC = \dfrac{BC}{BD}$

$\sin A = \dfrac{a}{2R}$

$\therefore \dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C} = 2R$.

43(a)

In $\triangle ABC$,

$\Delta = \sqrt{s(s-a)(s-b)(s-c)}$

where 's' is the Semi-perimeter of $\triangle ABC$,

$\Delta = \frac{1}{2} ab \sin C$

$= \frac{1}{2} ab \left(2 \sin C/_2 \cos C/_2\right)$

$\Rightarrow ab \sqrt{\dfrac{(s-a)(s-b)}{ab}} \sqrt{\dfrac{s(s-c)}{ab}}$

$\Rightarrow \sqrt{s(s-a)(s-b)(s-c)}$

43(b) $\dfrac{\sin(x-[x])}{x-[x]}$

$\Rightarrow \begin{cases} \dfrac{\sin(x-(-1))}{x-(-1)}, & -1<x<0 \\ \dfrac{\sin(x-0)}{x-0}, & 0<x<1 \end{cases}$

$f(x) = \begin{cases} \dfrac{\sin(x+1)}{x+1}, & -1<x<0 \\ \dfrac{\sin x}{x}, & 0<x<1 \end{cases}$

$\lim_{x \to 0^-} f(x) = \dfrac{\sin 1}{1} = \sin 1$

$\lim_{x \to 0^+} f(x) = 1$

limit doesn't exist

44(a) $\sqrt[3]{126} = (126)^{1/3}$

$(125+1)^{1/3} = \left\{125\left(1+\frac{1}{125}\right)\right\}^{1/3}$

$= 5\left\{1 + \frac{1}{3} \times \frac{1}{125} + \ldots\right\}$

$= 5\left\{1 + \frac{1}{3}(0.008)\right\}$

$= 5.01$

44(b) $y = \sin x$,

$y = \sin(2x) = \cancel{2}\pi/_{\cancel{2}} = \pi$

Amplitude remain same

$y = \sin(2x)$

$= \frac{1}{3} \sin(2x)$

Scanned with ACE Scanner

$$I = -2\sqrt{9+4x-x^2} + 5\sin^{-1}\left(\frac{x-2}{\sqrt{13}}\right) + c$$

$$\Rightarrow 5\sin^{-1}\left(\frac{x-2}{\sqrt{13}}\right) - 2\sqrt{9+4x-x^2} + c$$

47(b) $P(A_1) = 0.50, \quad P(G|A_1) = 0.90$

$P(A_2) = 0.30, \quad P(G|A_2) = 0.70$

$P(A_3) = 0.20, \quad P(G|A_3) = 0.60.$

$$P(G) = P(A_1)P(G|A_1) + P(A_2)P(G|A_2) + P(A_3)P(G|A_3)$$

$$= (0.50)(0.90) + (0.30)(0.70) + (0.20)(0.60)$$

$$= 0.78.$$

$$P(A_3|G) = \frac{P(A_3)\,P(G|A_3)}{P(G)}$$

$$= \frac{(0.20)(0.60)}{0.78} = \frac{2}{13}.$$

$$\boxed{P(A_3|G) = \frac{2}{13}}$$

M. Keerthana. PG(ASST)
R.L.T Academy - Athur.