1. The value of $\begin{vmatrix} 1 & 2 \\ 3 & 4 \end{vmatrix}$ is 1

(1) -2 (2) 2 (3) 10 (4) -10

2. The number of elements in a 3rd order determinant is 1

(1) 16 (2) 4 (3) 9 (4) 27

3. Value of the determinant $\begin{vmatrix} 1 & -5 & 6 \\ 2 & 3 & 8 \\ -1 & 5 & -6 \end{vmatrix}$ is 1

(1) 5 (2) 1 (3) -1 (4) 0

4. If $\begin{vmatrix} 3 & 4 \\ -x & 2 \end{vmatrix} = 0$ then the value of x is 1

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

5. The numerical value of $\begin{vmatrix} \cos\theta & \sin\theta \\ \operatorname{cosec}\theta & -\sec\theta \end{vmatrix}$ is 1

(1) 1 (2) -1 (3) -2 (4) 2

6. The value of the determinant $\begin{vmatrix} 91 & 92 & 93 \\ 94 & 95 & 96 \\ 97 & 98 & 99 \end{vmatrix}$ is 1

(1) 0 (2) 1140 (3) -1140 (4) 114

7. If $\frac{3}{x} - \frac{4}{y} = 3$ and $\frac{5}{x} - \frac{3}{y} = 16$, then y is equal to **2**

(1) -3 (2) 3

(3) $-\frac{1}{3}$ (4) $\frac{1}{3}$

8. If $\begin{vmatrix} 2 & 3 & x \\ 4 & 6 & 1 \\ 1 & 2 & 3 \end{vmatrix} = 0$, then the value of x is **2**

(1) $\frac{1}{2}$ (2) $-\frac{1}{2}$

(3) 2 (4) -2

9. If $\begin{vmatrix} 3x+2 & -2 \\ 5 & 2x+1 \end{vmatrix} = 10$, then the values of x are **2**

(1) $\frac{1}{2}, \frac{2}{3}$ (2) $-\frac{1}{2}, -\frac{2}{3}$

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

10. If $A = \begin{bmatrix} 5 & -1 \\ -3 & 2 \end{bmatrix}$, then A^T is **1**

(1) $\begin{bmatrix} 5 & -1 \\ 3 & 2 \end{bmatrix}$ (2) $\begin{bmatrix} 2 & -1 \\ -3 & 5 \end{bmatrix}$

(3) $\begin{bmatrix} 5 & -3 \\ -1 & 2 \end{bmatrix}$ (4) $\begin{bmatrix} 5 & 3 \\ 1 & 2 \end{bmatrix}$

11. If $A = \begin{bmatrix} 3 & 0 \\ 6 & 12 \end{bmatrix}$ then $\frac{1}{3}A$ is 1

(1) $\begin{bmatrix} 1 & 0 \\ 2 & 4 \end{bmatrix}$

(2) $\begin{bmatrix} 3 & 0 \\ 2 & 4 \end{bmatrix}$

(3) $\begin{bmatrix} 1 & 0 \\ 6 & 4 \end{bmatrix}$

(4) $\begin{bmatrix} 1 & 2 \\ 2 & 4 \end{bmatrix}$

12. If $A = \begin{bmatrix} 2 & 3 \\ -5 & 7 \end{bmatrix}$, then adj A is 1

(1) $\begin{bmatrix} 2 & -3 \\ -5 & 7 \end{bmatrix}$

(2) $\begin{bmatrix} 7 & 3 \\ -5 & 2 \end{bmatrix}$

(3) $\begin{bmatrix} 2 & -3 \\ 5 & 7 \end{bmatrix}$

(4) $\begin{bmatrix} 7 & -3 \\ 5 & 2 \end{bmatrix}$

13. If A is a matrix of order 3×4 and B is a matrix of order 5×3, then order of $B \times A$ is 1

(1) 3×3

(2) 5×4

(3) 4×5

(4) 4×3

14. The matrix $\begin{bmatrix} 3 & 2 & 1 \\ 2 & 5 & 6 \\ 1 & 6 & 2 \end{bmatrix}$ is a 1

(1) Scalar matrix

(2) Diagonal matrix

(3) Symmetric matrix

(4) Skew symmetric matrix

15. If A is any square matrix, then A.adj A is

(1) $|A|$

(2) 0

(3) A

(4) $|A|I$

16. If $A = \begin{bmatrix} 2 & -3 \\ 0 & 4 \\ -2 & 1 \end{bmatrix}$ & $B = \begin{bmatrix} 1 & 1 \\ -2 & 1 \\ 2 & -1 \end{bmatrix}$ then A + B is

(1) $\begin{bmatrix} 3 & -2 \\ -2 & 5 \\ 0 & 0 \end{bmatrix}$

(2) $\begin{bmatrix} 1 & -4 \\ 2 & 5 \\ 0 & 0 \end{bmatrix}$

(3) $\begin{bmatrix} 3 & 2 \\ -2 & 5 \\ 0 & 0 \end{bmatrix}$

(4) $\begin{bmatrix} 3 & -2 \\ 2 & 5 \\ 0 & 0 \end{bmatrix}$

17. If $A = \begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix}$, then A^2 is

(1) $\begin{bmatrix} 4 & 16 \\ 1 & 9 \end{bmatrix}$

(2) $\begin{bmatrix} 8 & 20 \\ 5 & 13 \end{bmatrix}$

(3) $\begin{bmatrix} 0 & -4 \\ -1 & -5 \end{bmatrix}$

(4) $\begin{bmatrix} 0 & 4 \\ 1 & 5 \end{bmatrix}$

18. If $A = \begin{bmatrix} 2 & -1 \\ 3 & 4 \end{bmatrix}$ then A^{-1} is

(1) $\frac{1}{5}\begin{bmatrix} 4 & 1 \\ -3 & 2 \end{bmatrix}$

(2) $\frac{1}{5}\begin{bmatrix} 2 & 3 \\ -1 & 4 \end{bmatrix}$

(3) $\frac{1}{11}\begin{bmatrix} 4 & 1 \\ -3 & 2 \end{bmatrix}$

(4) $\frac{1}{11}\begin{bmatrix} 4 & 3 \\ -1 & 2 \end{bmatrix}$

19. If $A = \begin{bmatrix} 7 & -1 \\ 2 & 8 \end{bmatrix}$, then $A - A^T$ is

(1) $\begin{bmatrix} 0 & -3 \\ 3 & 0 \end{bmatrix}$

(2) $\begin{bmatrix} 0 & -3 \\ -3 & 0 \end{bmatrix}$

(3) $\begin{bmatrix} 0 & 3 \\ 3 & 0 \end{bmatrix}$

(4) $\begin{bmatrix} 0 & 3 \\ -3 & 0 \end{bmatrix}$

20. If $A = \begin{bmatrix} 3 & 5 & -1 \\ 2 & 4 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -1 \\ 5 & 2 \\ 1 & -1 \end{bmatrix}$ then $A \times B$ is

(1) $\begin{bmatrix} 33 & 27 \\ 8 & 5 \end{bmatrix}$

(2) $\begin{bmatrix} 33 & 8 \\ 27 & 5 \end{bmatrix}$

(3) $\begin{bmatrix} 5 & 8 \\ 33 & 27 \end{bmatrix}$

(4) $\begin{bmatrix} 33 & 5 \\ 27 & 8 \end{bmatrix}$

21. The characteristic equation of $\begin{bmatrix} 2 & 5 \\ 4 & 5 \end{bmatrix}$ is

(1) $\lambda^2 - 7\lambda + 10 = 0$

(2) $\lambda^2 + 7\lambda + 10 = 0$

(3) $\lambda^2 + 7\lambda - 10 = 0$

(4) $\lambda^2 - 7\lambda - 10 = 0$

22. If $A = \begin{bmatrix} 2 & 3 \\ -1 & 4 \end{bmatrix}$, then $3A + 2A'$ is

(1) $\begin{bmatrix} 10 & 11 \\ 3 & 20 \end{bmatrix}$

(2) $\begin{bmatrix} 10 & 11 \\ -3 & 20 \end{bmatrix}$

(3) $\begin{bmatrix} 10 & 7 \\ -3 & 20 \end{bmatrix}$

(4) $\begin{bmatrix} 10 & 7 \\ 3 & 20 \end{bmatrix}$

23. If $A + B = \begin{bmatrix} 3 & -1 & 0 \\ 2 & 2 & 5 \end{bmatrix}$ and $A - B = \begin{bmatrix} 5 & 3 & 4 \\ 6 & -2 & 7 \end{bmatrix}$ then A is

(1) $\begin{bmatrix} 4 & 1 & 2 \\ 4 & 0 & 6 \end{bmatrix}$

(2) $\begin{bmatrix} 1 & -2 & -2 \\ -2 & 2 & -1 \end{bmatrix}$

(3) $\begin{bmatrix} 4 & -1 & 2 \\ -4 & 0 & 6 \end{bmatrix}$

(4) $\begin{bmatrix} 1 & 2 & 2 \\ -2 & -2 & 1 \end{bmatrix}$

24. If $A = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$, then AA' is 2

(1) $\begin{bmatrix} 1 & 2 & 3 \\ 3 & 4 & 6 \\ 3 & 6 & 9 \end{bmatrix}$

(2) $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 3 & 4 & 9 \end{bmatrix}$

(3) $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 3 & 6 & 9 \end{bmatrix}$

(4) $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 2 & 6 \\ 3 & 6 & 9 \end{bmatrix}$

25. If $A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$ then minor of a_{21} is 2

(1) $(a_{22}a_{33} - a_{23}a_{32})$

(2) $(a_{12}a_{33} - a_{13}a_{32})$

(3) $(a_{21}a_{32} - a_{31}a_{22})$

(4) $(a_{21}a_{33} - a_{31}a_{23})$

26. The magnitude of the vector $i - j + k$ is 1

(1) 1

(2) -1

(3) 0

(4) $\sqrt{3}$

27. If the position vectors of the points A and B are $2i + 3j - k$ and $i + 4j + 2k$, then $\overrightarrow{BA}$ is 1

(1) $i - j + k$

(2) $i - j - 3k$

(3) $-i + j + 3k$

(4) $i + j + k$

28. Two vectors $\vec{a}$ & $\vec{b}$ are perpendicular if 1

(1) $\vec{a} \cdot \vec{b} = 0$

(2) $\vec{a} \times \vec{b} = \vec{0}$

(3) $\vec{a} + \vec{b} = \vec{0}$

(4) $\vec{a} - \vec{b} = \vec{0}$

29. If $|\vec{a}| = 0$, then $\vec{a}$ is called 1

(1) Null vector
(2) Unit vector
(3) – ve Vector
(4) Scalar

30. The unit vector in the direction of $\vec{a}$ is given by 1

(1) $\hat{a} = \vec{a} \times |\vec{a}|$
(2) $\hat{a} = \vec{a} - |\vec{a}|$
(3) $\hat{a} = \frac{\vec{a}}{|\vec{a}|}$
(4) $\hat{a} = \frac{|\vec{a}|}{\vec{a}}$

31. If $\vec{a}$ and $\vec{b}$ are the diagonals of a rhombus, then 1

(1) $\vec{a} \times \vec{b} = \vec{0}$
(2) $\vec{a} \cdot \vec{b} = 0$
(3) $\vec{a} \cdot \vec{b} = 1$
(4) $|\vec{a} \times \vec{b}| = \vec{a} \cdot \vec{b}$

32. If a force $\vec{F} = 2i + j - 3k$ acting on a body at $(1, -1, 2)$ displaces it to the point $(1, 3, 2)$, then the work done is 2

(1) 4
(2) 8
(3) 1
(4) 2

33. If $\vec{a} = i + j$, $\vec{b} = j + k$, $\vec{c} = k + i$, then the magnitude of the vector $\vec{a} + \vec{b} + \vec{c}$ is 2

(1) $2\sqrt{3}$
(2) $3\sqrt{2}$
(3) 12
(4) 6

34. Area of the parallelogram formed by the vectors $3i - 2j + k$ and $2i + j - 3k$ is

(1) $\sqrt{155}$
(2) $\sqrt{195}$
(3) $\sqrt{165}$
(4) $\sqrt{185}$

35. The projection of $3i - 4j - 5k$ on $2i - 3j + k$ is

(1) $\frac{23}{\sqrt{14}}$ (2) $\frac{14}{\sqrt{13}}$

(3) $-\frac{13}{\sqrt{14}}$ (4) $\frac{13}{\sqrt{14}}$

36. Cosine of the angle between the vectors $2i - j + k$ and $i + 2j + k$ is

(1) $-\frac{1}{6}$ (2) $\frac{5}{6}$

(3) $\frac{1}{6}$ (4) $-\frac{5}{6}$

37. Area of triangle whose adjacent sides are $3i + 4j$ and $5i + 7j + k$ is

(1) $\frac{\sqrt{26}}{2}$ (2) $\sqrt{13}$

(3) 3 (4) $\frac{\sqrt{13}}{2}$

38. If the vectors $2i + \lambda j + 3k$ and $6i - 9j + 9k$ are perpendicular, then the value of λ is

(1) $-\frac{13}{3}$ (2) $\frac{13}{3}$

(3) $-\frac{1}{3}$ (4) $\frac{1}{3}$

39. ${}^{n}C_{r}$ is given by

(1) $\frac{\lfloor n}{\lfloor n-r}$ (2) $\frac{\lfloor n}{\lfloor r \cdot \lfloor n-r}$

(3) $\frac{\lfloor n}{\lfloor r}$ (4) $\frac{\lfloor n-r}{\lfloor n \cdot \lfloor r}$

40. The first term in the expansion of $\left(\frac{\sqrt{x}}{2}-\frac{2}{x^2}\right)^6$ is

(1) $\frac{x^3}{12}$ (2) $\frac{x^3}{64}$

(3) $\frac{x^{1/3}}{64}$ (4) $\frac{x^{12}}{12}$

41. The middle term in the expansion of $(2x-y)^6$ is

(1) $120x^3y^3$ (2) $-120x^3y^3$

(3) $160x^3y^3$ (4) $-160x^3y^3$

42. 7th term in the expansion of $\left(x^2+\frac{1}{x^2}\right)^{10}$ is

(1) $10C_6x^7$ (2) $10C_6x^{-7}$

(3) $10C_6x^{-4}$ (4) $10C_6x^4$

43. If $(\sqrt{2}+1)^5 = 29\sqrt{2}+41$, then $(\sqrt{2}+1)^5+(\sqrt{2}-1)^5$ is

(1) $58\sqrt{2}$ (2) 82

(3) -82 (4) $-58\sqrt{2}$

44. The number of terms in the expansion of $(2x^2-\sqrt{x})^{-7}$ is

(1) 8 (2) -6

(3) 6 (4) ∞

45. The term independent of x in the expansion of $\left(x^2-\frac{2}{x}\right)^9$ is

(1) $-9C_6\cdot 2^6$ (2) $9C_6\cdot 2^6$

(3) $9C_6$ (4) $-9C_6$

46. If x is very very small compared to unity, then the second approximation of $(1 + x)^n$ using binomial theorem is

(1) $1 + x + x^2$

(2) $1 - x + nx^2$

(3) $1 + nx + \frac{n(n-1)}{2!}x^2$

(4) $1 + nx + n(n-1)x^2$

47. The coefficient of x^{21} in the expansion of $\left(x^2 - \frac{6}{x}\right)^{15}$ is

(1) $-6^3 . 15C_3$

(2) $6^3 . 15C_3$

(3) $6^2 . 15C_2$

(4) does not exist

48. The constant term in the expansion of $\left(x - \frac{3}{x^4}\right)^{10}$ is

(1) -405

(2) 405

(3) 450

(4) -450

49. The middle term in the expansion of $\left(\frac{a}{x^3} + \frac{x^2}{a^3}\right)^{12}$ is

(1) $12C_6$

(2) $12C_6 x^6 a^{12}$

(3) $12C_6 x . a$

(4) $12C_6 x^{-6} a^{-12}$

50. The value of $nC_n + nC_{n-1} + nC_{n-2}$ is

(1) $\frac{n(n+2)}{2}$

(2) $\frac{n(n+1)(2n+1)}{2}$

(3) $\frac{n^2 + n - 2}{2}$

(4) $\frac{n^2 + n + 2}{2}$

51. The area of a sector of a circle of radius 'r' and central angle 'θ' radian is given by 1

(1) $\frac{1}{2}r^2\theta$ (2) $\frac{1}{2}r\theta$

(3) $r^2\theta$ (4) $\frac{r\theta^2}{2}$

52. $\frac{7\pi}{6}$ radian is equal to 1

(1) 111° (2) 102°

(3) 210° (4) 240°

53. The perimeter of sector of a circle of radius 5 cm and arc length 2 cm is 1

(1) 9 cm (2) 7 cm

(3) 8 cm (4) 12 cm

54. 300° is equal to 1

(1) $\frac{3\pi}{5}$ rad (2) $\frac{5}{3\pi}$ rad

(3) $\frac{3}{5\pi}$ rad (4) $\frac{5\pi}{3}$ rad

55. The length of the arc of a circle of radius 5 cm and central angle 120° is 2

(1) 10π cm (2) $\frac{10\pi}{3}$ cm

(3) $\frac{3}{10}\pi$ cm (4) 3π cm

56. The area of sector of a circle is 20 sq. cm. If the radius of the circle is 5 cm, then length of the arc is 2

(1) 4 cm (2) 8 cm

(3) 12 cm (4) 15 cm

57. If $\cot\theta = \frac{m}{n}$ then $\sin\theta$ is equal to 1

(1) $\frac{n}{\sqrt{m^2+n^2}}$ (2) $\frac{n}{\sqrt{m^2-n^2}}$

(3) $\frac{m}{\sqrt{m^2+n^2}}$ (4) $\frac{m}{\sqrt{m^2-n^2}}$

58. $\sqrt{1-\cos^2\theta}$ is equal to 1

(1) $\cos\theta$ (2) $1-\cos\theta$

(3) $\sin\theta$ (4) $1-\sin\theta$

59. $\frac{\sqrt{1+\tan^2\theta}}{\sqrt{1+\cot^2\theta}}$ is equal to 2

(1) $\sin\theta$ (2) $\cos\theta$

(3) $\cot\theta$ (4) $\tan\theta$

60. $\sec^2\theta + \text{cosec}^2\theta$ is equal to 2

(1) $\sec^2\theta \cdot \text{cosec}^2\theta$ (2) $\cos^2\theta \cdot \sin^2\theta$

(3) 1 (4) $\cos^2\theta \cdot \tan^2\theta$

61. $\sin A \cdot \cos A \cdot \tan A + \cos A \cdot \sin A \cdot \cot A$ is equal to 2

(1) 1 (2) 0

(3) $\sin^2 A$ (4) $\cos^2 A$

62. $\sqrt{\frac{1-\sin A}{1+\sin A}}$ is equal to 2

(1) $\sec A + \tan A$ (2) $\sec A - \tan A$

(3) $\text{cosec}\, A + \cot A$ (4) $\text{cosec}\, A - \cot A$

2

63. If $x(\cos^2 30° - \tan^2 60°) = 3$, then x is

(1) $\frac{3}{4}$

(2) $-\frac{3}{4}$

(3) $\frac{4}{3}$

(4) $-\frac{4}{3}$

1

64. $\tan(990° - A)$ is equal to

(1) $\tan A$

(2) $-\tan A$

(3) $\cot A$

(4) $-\cot A$

1

65. If $\tan\theta = -\frac{3}{4}$ and $270° < \theta < 360°$, then $\cos\theta =$

(1) $\frac{4}{5}$

(2) $-\frac{4}{5}$

(3) $\frac{3}{5}$

(4) $-\frac{3}{5}$

2

66. $\dfrac{\sin(180° - \theta)\cot(90° - \theta)\cos(360° - \theta)}{\tan(180° + \theta)\tan(90° + \theta)\cdot\sin(-\theta)} =$

(1) $\sin\theta$

(2) $\cos\theta$

(3) 1

(4) $\text{cosec}\,\theta$

67. The value of $\dfrac{\sin(2\pi - A)}{\sin(\pi - A)} - \dfrac{\tan\left(\frac{\pi}{2} + A\right)}{\cot(2\pi + A)} + \dfrac{\text{cosec}(-A)}{\sec\left(\frac{\pi}{2} + A\right)}$ is equal to

(1) 3

(2) -3

(3) 1

(4) -1

68. If $A + B + C = 180°$ then $\cos\left(\frac{B + C}{2}\right) =$ 2

(1) $\sin\left(\frac{A}{2}\right)$

(2) $\cos\left(\frac{A}{2}\right)$

(3) $-\sin\left(\frac{A}{2}\right)$

(4) $-\cos\left(\frac{A}{2}\right)$

69. $\sin(90° + \theta)\sin(90° - \theta) - \sin(180° + \theta)\sin(180° - \theta)$ is equal to 2

(1) $2\sin^2\theta$

(2) $2\cos^2\theta$

(3) 0

(4) 1

70. If $\sin A = -\frac{3}{5}$ and $270° < A < 360°$, then the value of $\frac{3\sin A - 4\cos A}{2\sin A + 4\cos A}$ is 2

(1) $\frac{5}{2}$

(2) $-\frac{5}{2}$

(3) $\frac{5}{4}$

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

71. From the top of a cliff the angle of depression of an object 200 m from the base is 30°. The height of the cliff is

(1) 200 m

(2) $200\sqrt{3}$ m

(3) $\frac{200}{\sqrt{3}}$ m

(4) $200\sqrt{2}$

72. The angle of elevation of top of a building 100 m away from its base is 45°. The height of the building is

(1) $\frac{100}{\sqrt{2}}$ m

(2) $100\sqrt{2}$ m

(3) 100 m

(4) $100\sqrt{3}$ m

85. $2 \sin 35° \sin 25° =$ 1

(1) $\frac{1}{2} - \cos 10°$ (2) $\cos 10° - \frac{1}{2}$

(3) $\frac{\sqrt{3}}{2} - \cos 10°$ (4) $\cos 10° - \frac{\sqrt{3}}{2}$

86. $\cos(\alpha + \beta) + \cos(\alpha - \beta)$ is equal to 1

(1) $2 \cos \alpha \cdot \cos \beta$

(2) $-2 \sin \alpha \sin \beta$

(3) $2 \cos\left(\frac{\alpha + \beta}{2}\right) \cdot \cos\left(\frac{\alpha - \beta}{2}\right)$

(4) $2 \sin\left(\frac{\alpha + \beta}{2}\right) \cdot \sin\left(\frac{\alpha - \beta}{2}\right)$

87. $\frac{\sin 4A + \sin 3A + \sin 2A}{\cos 4A + \cos 3A + \cos 2A}$ is equal to

(1) $\tan 4A + \tan 3A + \tan A$ (2) $\tan 9A$

(3) $\tan 3A$ (4) $\tan\left(\frac{9A}{2}\right)$

88. $\cos 10° \cdot \cos 50° \cdot \cos 70°$ is equal to

(1) $\frac{\sqrt{3}}{16}$ (2) $\frac{3}{16}$

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

89. The value of $\frac{\sin 8A - \sin 2A}{\cos 2A - \cos 8A}$ is

(1) $\tan 5A$ (2) $\cot 5A$

(3) $-\tan 5A$ (4) $-\cot 5A$

90. If $A + B + C = \pi$, then $\tan 4A + \tan 4B + \tan 4C =$

(1) $\tan 4A \cdot \tan 4B \cdot \tan 4C$

(2) $4(\tan A + \tan B + \tan C)$

(3) $\tan 4A \cdot \tan 4B + \tan 4B \cdot \tan 4C + \tan 4C \cdot \tan 4A$

(4) 1

91. In any triangle ABC, $\tan\left(\frac{C-A}{2}\right)$ is equal to

(1) $\frac{a-b}{a+b} \cdot \cot\left(\frac{B}{2}\right)$

(2) $\frac{b-c}{b+c} \cdot \cot\left(\frac{A}{2}\right)$

(3) $\frac{c-a}{c+a} \cdot \cot\left(\frac{B}{2}\right)$

(4) $\frac{c-a}{c+a} \cot\left(\frac{A}{2}\right)$

92. In a Δ ABC $b = 2$ cm, $A = 110°$ and $C = 35°$. Then the value of c is

(1) $\sqrt{2}$ cm

(2) $\sqrt{2} - 1$ cm

(3) 2 cm

(4) $2\sqrt{2}$ cm

93. In any Δ ABC, the correct statement from the following is

(1) $\cos\left(\frac{C}{2}\right) = \sqrt{\frac{s(s-c)}{ab}}$

(2) $\sin\left(\frac{C}{2}\right) = \sqrt{\frac{(s-c)(s-b)}{bc}}$

(3) $\tan\left(\frac{C}{2}\right) = \sqrt{\frac{(s-a)(s-c)}{s(s-b)}}$

(4) $\tan\left(\frac{A}{2}\right) = \sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$

94. In a triangle ABC if $a = \sqrt{3} + 1$, $b = \sqrt{2}$ and $c = 2$, then angle C is

(1) 30°

(2) 45°

(3) 60°

(4) 105°

95. In a triangle ABC if $A = 45°$, $C = 60°$ and $b = 3$, then $a =$

(1) 2.69
(2) 1.69
(3) 1.9
(4) 2.19

96. In a triangle ABC, if $A = 120°$, $a = \sqrt{6}$, $b = 2$, then B is

(1) 15°
(2) 135°
(3) 45°
(4) 60°

97. $\tan^{-1}(\tan(-320°))$ is

(1) 60°
(2) – 60°
(3) 40°
(4) – 40°

98. $\tan^{-1}\left(\frac{1}{2}\right) + \tan^{-1}\left(\frac{1}{3}\right)$ is equal to

(1) $\frac{\pi}{2}$
(2) $\frac{\pi}{4}$
(3) $\frac{\pi}{3}$
(4) $\frac{\pi}{6}$

99. $\cot^{-1}x + \tan^{-1}x$ is equal to

(1) $\frac{\pi}{2}$
(2) $\frac{\pi}{4}$
(3) π
(4) $\frac{\pi}{3}$

100. $\cos^{-1}\left(\frac{7}{25}\right)$ can be written as

(1) $\tan^{-1}\left(\frac{24}{25}\right)$
(2) $\tan^{-1}\left(\frac{24}{7}\right)$
(3) $\tan^{-1}\left(\frac{25}{24}\right)$
(4) $\tan^{-1}\left(\frac{7}{24}\right)$