MATHS

BOOKS - NIKITA MATHS (HINGLISH)

TRIGONOMETRIC FUNCTIONS

MCQs

1. The principal solutions of $\sin x = \frac{1}{\sqrt{2}}$ is

A. $-\frac{\pi}{4}$

B. $-\frac{3\pi}{4}$

C. $\frac{3\pi}{4}$

D. $\frac{5\pi}{4}$

Answer: C

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2. The principal solutions of $\sin x = \frac{1}{\sqrt{2}}$ is

A. $-\frac{\pi}{4}$

B. $\frac{\pi}{4}$

C. $-\frac{3\pi}{4}$

D. $\frac{5\pi}{4}$

Answer: B

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3. Find the principal solutions of each of the following equations :

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

(ii) $\cos x = \frac{1}{\sqrt{2}}$

(iii) $\tan x = \frac{1}{\sqrt{3}}$

A. $\frac{-\pi}{6}$

B. $-\frac{5\pi}{6}$

C. $\frac{2\pi}{3}$

D. $-\frac{2\pi}{3}$

Answer: A

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4. Find the principal solutions of each of the following equations :

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

(ii) $\cos x = \frac{1}{\sqrt{2}}$

(iii) $\tan x = \frac{1}{\sqrt{3}}$

A. $\frac{\pi}{6}$

B. $-\frac{5\pi}{6}$

C. $\frac{7\pi}{6}$

D. $\frac{5\pi}{4}$

Answer: D

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5. समीकरण $\sin x = \frac{\sqrt{3}}{2}$ का मुख्य हल ज्ञात कीजिए |

A. $\frac{\pi}{3}$

B. $-\frac{\pi}{3}$

C. $\frac{5\pi}{3}$

D. $-\frac{2\pi}{3}$

Answer: A

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6. समीकरण $\sin x = \frac{\sqrt{3}}{2}$ का मुख्य हल ज्ञात कीजिए |

A. $-\frac{\pi}{3}$

B. $\frac{5\pi}{4}$

C. $\frac{2\pi}{3}$

D. $-\frac{2\pi}{3}$

Answer: C

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7. The principal solution of $\sin x = \frac{-1}{\sqrt{2}}$ is

A. $\frac{\pi}{4}$

B. $\frac{3\pi}{4}$

C. $-\frac{7\pi}{4}$

D. $\frac{7\pi}{4}$

Answer: D

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8. The principal solution of $\sin x = \frac{-1}{\sqrt{2}}$ is

A. $\frac{\pi}{4}$

B. $\frac{3\pi}{4}$

C. $\frac{5\pi}{4}$

D. $\frac{-5\pi}{4}$

Answer: D

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9. The principal solution of $\sin x = \frac{-1}{2}$ is

A. $\frac{7\pi}{6}$

B. $-\frac{7\pi}{6}$

C. $\frac{\pi}{6}$

D. $\frac{5\pi}{6}$

Answer: A

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10. The principal solution of $\sin x = \frac{-1}{\sqrt{2}}$ is

A. $\frac{11\pi}{6}$

B. $-\frac{11\pi}{6}$

C. $\frac{\pi}{6}$

D. $\frac{5\pi}{6}$

Answer: B

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11. The principal solution of $\sin x = -\frac{\sqrt{3}}{2}$ is

A. $\frac{\pi}{3}$

B. $\frac{4\pi}{3}$

C. $\frac{2\pi}{3}$

D. $-\frac{4\pi}{3}$

Answer: B

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12. The principal solution of $\sin x = -\frac{\sqrt{3}}{2}$ is

A. $\frac{\pi}{3}$

B. $\frac{-5\pi}{3}$

C. $\frac{5\pi}{3}$

D. $\frac{2\pi}{3}$

Answer: C

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13. The principal solution $\cos x = \frac{-\sqrt{3}}{2}$ is

A. $\frac{5\pi}{6}$

B. $\frac{\pi}{6}$

C. $\frac{7\pi}{6}$

D. $-\frac{5\pi}{6}$

Answer: c

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14. The principal solution $\cos x = \frac{\sqrt{3}}{2}$ is

A. $\frac{7\pi}{6}$

B. $-\frac{5\pi}{6}$

C. $\frac{5\pi}{6}$

D. $\frac{11\pi}{6}$

Answer: D

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15. The principal solution $\cos x = \frac{1}{\sqrt{2}}$ is

A. $\frac{\pi}{4}$

B. $\frac{3\pi}{4}$

C. $\frac{5\pi}{4}$

D. $-\frac{3\pi}{4}$

Answer: A

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16. The principal solution $\cos x = \frac{1}{\sqrt{2}}$ is

A. $\frac{3\pi}{4}$

B. $-\frac{3\pi}{4}$

C. $\frac{5\pi}{4}$

D. $\frac{7\pi}{4}$

Answer: D

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17. The principal solution $\cos x = \frac{1}{2}$ is

A. $\frac{2\pi}{3}$

B. $-\frac{2\pi}{3}$

C. $\frac{\pi}{3}$

D. $\frac{7\pi}{4}$

Answer: C

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18. The principal solution $\cos x = \frac{1}{2}$ is

A. $\frac{7\pi}{3}$

B. $-\frac{2\pi}{3}$

C. $\frac{2\pi}{3}$

D. $\frac{5\pi}{3}$

Answer: D

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19. The principal solution $\cos x = \frac{-\sqrt{3}}{2}$ is

A. $\frac{5\pi}{6}$

B. $\frac{\pi}{6}$

C. $\frac{\pi}{3}$

D. $\frac{-\pi}{6}$

Answer: A

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20. The principal solution $\cos x = \frac{-\sqrt{3}}{2}$ is

A. $\frac{\pi}{6}$

B. $\frac{7\pi}{6}$

C. $\frac{-\pi}{6}$

D. $\frac{\pi}{3}$

Answer: B

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21. The principal solution $\cos x = -\frac{1}{\sqrt{2}}$ is

A. $\frac{\pi}{4}$

B. $\frac{3\pi}{4}$

C. $\frac{7\pi}{4}$

D. $-\frac{\pi}{4}$

Answer: B

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22. The principal solution $\cos x = -\frac{1}{\sqrt{2}}$ is

A. $\frac{\pi}{4}$

B. $\frac{7\pi}{6}$

C. $\frac{5\pi}{4}$

D. $-\frac{\pi}{4}$

Answer: C

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23. The principal solution $\cos x = -\frac{1}{2}$ is

A. $\frac{2\pi}{3}$

B. $\frac{\pi}{3}$

C. $\frac{5\pi}{4}$

D. $-\frac{\pi}{3}$

Answer: A

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24. The principal solution $\cos x = -\frac{1}{2}$ is

A. $\frac{5\pi}{4}$

B. $\frac{\pi}{3}$

C. $\frac{4\pi}{3}$

D. $-\frac{\pi}{3}$

Answer: C

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25. The principal solution $\tan x = \frac{1}{\sqrt{3}}$ is

A. $\frac{5\pi}{6}$

B. $\frac{11\pi}{6}$

C. $\frac{-\pi}{6}$

D. $\frac{\pi}{6}$

Answer: D

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26. The principal solution $\tan x = \frac{1}{\sqrt{3}}$ is

A. $\frac{7\pi}{6}$

B. $\frac{5\pi}{6}$

C. $\frac{11\pi}{6}$

D. $\frac{\pi}{6}$

Answer: A

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27. The principal solution $\tan x = 1$ is

A. $\frac{3\pi}{4}$

B. $\frac{\pi}{4}$

C. $\frac{7\pi}{4}$

D. $\frac{-\pi}{4}$

Answer: B

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28. The principal solution $\tan x = 1$ is

A. $\frac{7\pi}{4}$

B. $\frac{3\pi}{4}$

C. $\frac{-5\pi}{4}$

D. $\frac{5\pi}{4}$

Answer: D

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29. The principal solution $\tan x = \sqrt{3}$ is

A. $\frac{\pi}{3}$

B. $\frac{2\pi}{3}$

C. $\frac{-\pi}{3}$

D. $\frac{-4\pi}{3}$

Answer: A

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30. The principal solution $\tan x = \sqrt{3}$ is

A. $\frac{2\pi}{3}$

B. $\frac{4\pi}{3}$

C. $\frac{-\pi}{3}$

D. $\frac{-4\pi}{3}$

Answer: B

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31. The principal solution $\tan x = \frac{1}{\sqrt{3}}$ is

A. $\frac{7\pi}{6}$

B. $\frac{\pi}{6}$

C. $\frac{5\pi}{6}$

D. $\frac{-5\pi}{6}$

Answer: C

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32. The principal solution $\tan x = \frac{1}{\sqrt{3}}$ is

A. $\frac{11\pi}{6}$

B. $\frac{7\pi}{6}$

C. $\frac{\pi}{6}$

D. $\frac{-5\pi}{6}$

Answer: A

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33. The principal solution $\tan x = -1$ is

A. $\frac{5\pi}{4}$

B. $\frac{\pi}{4}$

C. $\frac{3\pi}{4}$

D. $-\frac{3\pi}{4}$

Answer: C

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34. The principal solution $\tan x = -1$ is

A. $-\frac{3\pi}{4}$

B. $\frac{5\pi}{4}$

C. $\frac{\pi}{4}$

D. $\frac{7\pi}{4}$

Answer: D

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35. The principal solution $\tan x = -\sqrt{3}$ is

A. $\frac{2\pi}{3}$

B. $\frac{\pi}{3}$

C. $\frac{4\pi}{3}$

D. $\frac{-2\pi}{3}$

Answer: A

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36. The principal solution $\tan x = -\sqrt{3}$ is

A. $\frac{\pi}{3}$

B. $\frac{5\pi}{3}$

C. $\frac{4\pi}{3}$

D. $-\frac{2\pi}{3}$

Answer: B

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37. The principal solution $\cos ecx = \sqrt{2}$ are

A. $\frac{\pi}{2}, \frac{2\pi}{3}$

B. $\frac{-\pi}{4}, \frac{-3\pi}{4}$

C. $\frac{5\pi}{4}, \frac{7\pi}{4}$

D. $\frac{\pi}{4}, \frac{3\pi}{4}$

Answer: D

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38. General solution of $\cos ecx = -\sqrt{2}$ is

A. $\frac{\pi}{2}, \frac{2\pi}{3}$

B. $\frac{-5\pi}{4}, \frac{-7\pi}{4}$

C. $\frac{5\pi}{4}, \frac{7\pi}{4}$

D. $\frac{\pi}{4}, \frac{3\pi}{4}$

Answer: C

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39. The principal solution $\cos ecx = 2$ are

A. $\frac{\pi}{3}, \frac{\pi}{6}$

B. $\frac{\pi}{6}, \frac{5\pi}{6}$

C. $\frac{7\pi}{6}, \frac{11\pi}{6}$

D. $\frac{-\pi}{6}, \frac{-5\pi}{6}$

Answer: B

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40. The principal solution $\operatorname{cosec} x = -2$ are

A. $\frac{-7\pi}{6}, \frac{-11\pi}{6}$

B. $\frac{\pi}{6}, \frac{7\pi}{6}$

C. $\frac{\pi}{6}, \frac{5\pi}{6}$

D. $\frac{7\pi}{6}, \frac{11\pi}{6}$

Answer: D

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41. The principal solution $\sqrt{3}\operatorname{cosec} x - 2 = 0$ are

A. $\frac{\pi}{3}, \frac{3\pi}{3}$

B. $\frac{4\pi}{3}, \frac{5\pi}{3}$

C. $\frac{-\pi}{3}, \frac{-2\pi}{3}$

D. $\frac{\pi}{3}, \frac{4\pi}{3}$

Answer: A

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42. The principal solution $\sqrt{3}\cos ecx + 2 = 0$ are

A. $\frac{\pi}{3}, \frac{3\pi}{3}$

B. $\frac{2\pi}{3}, \frac{5\pi}{3}$

C. $\frac{4\pi}{3}, \frac{5\pi}{3}$

D. $\frac{\pi}{3}, \frac{4\pi}{3}$

Answer: C

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43. The principal solution $\sqrt{3}\sec x - 2 = 0$ are

A. $\frac{5\pi}{6}, \frac{7\pi}{6}$

B. $\frac{\pi}{6}, \frac{11\pi}{6}$

C. $\frac{\pi}{6}, \frac{5\pi}{6}$

D. $\frac{7\pi}{6}, \frac{11\pi}{6}$

Answer: B

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44. The principal solution $\sqrt{3}\sec x + 2 = 0$ are

A. $\frac{5\pi}{6}, \frac{7\pi}{6}$

B. $\frac{\pi}{6}, \frac{11\pi}{6}$

C. $\frac{\pi}{6}, \frac{5\pi}{6}$

D. $\frac{7\pi}{6}, \frac{11\pi}{6}$

Answer: A

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45. The principal solution $\sec x = \sqrt{2}$ are

A. $\frac{3\pi}{4}, \frac{5\pi}{4}$

B. $\frac{\pi}{4}, \frac{5\pi}{4}$

C. $\frac{3\pi}{4}, \frac{7\pi}{4}$

D. $\frac{\pi}{4}, \frac{7\pi}{4}$

Answer: D

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46. The principal solution $\sec x = \sqrt{2}$ are

A. $\frac{3\pi}{4}, \frac{5\pi}{4}$

B. $\frac{\pi}{4}, \frac{5\pi}{4}$

C. $\frac{3\pi}{4}, \frac{7\pi}{4}$

D. $\frac{\pi}{4}, \frac{7\pi}{4}$

Answer: D

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47. The principal solution $\sec x = 2$ are

A. $\frac{\pi}{3}, \frac{2\pi}{3}$

B. $\frac{\pi}{3}, \frac{5\pi}{3}$

C. $\frac{2\pi}{3}, \frac{4\pi}{3}$

D. $\frac{4\pi}{3}, \frac{5\pi}{3}$

Answer: B

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48. The principal solution $\sec x = -2$ are

A. $\frac{\pi}{3}, \frac{2\pi}{3}$

B. $\frac{\pi}{3}, \frac{5\pi}{3}$

C. $\frac{2\pi}{3}, \frac{4\pi}{3}$

D. $\frac{4\pi}{3}, \frac{5\pi}{3}$

Answer: C

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49. The principal solution $\sqrt{3}\cot x - 1 = 0$ are

A. $\frac{\pi}{3}, \frac{4\pi}{3}$

B. $\frac{2\pi}{3}, \frac{5\pi}{3}$

C. $\frac{\pi}{3}, \frac{2\pi}{3}$

D. $\frac{4\pi}{3}, \frac{5\pi}{3}$

Answer: A

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50. The principal solution $\sqrt{3}\cot x + 1 = 0$ are

A. $\frac{\pi}{3}, \frac{4\pi}{3}$

B. $\frac{2\pi}{3}, \frac{5\pi}{3}$

C. $\frac{\pi}{3}, \frac{2\pi}{3}$

D. $\frac{4\pi}{3}, \frac{5\pi}{3}$

Answer: B

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51. The principal solution $\cot x = 1$ are

A. $\frac{\pi}{4}, \frac{3\pi}{4}$

B. $\frac{\pi}{4}, \frac{5\pi}{4}$

C. $\frac{5\pi}{4}, \frac{7\pi}{4}$

D. $\frac{3\pi}{4}, \frac{7\pi}{4}$

Answer: B

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52. The principal solution $\cot x = -1$ are

A. $\frac{\pi}{4}, \frac{3\pi}{4}$

B. $\frac{\pi}{4}, \frac{5\pi}{4}$

C. $\frac{5\pi}{4}, \frac{7\pi}{4}$

D. $\frac{3\pi}{4}, \frac{7\pi}{4}$

Answer: D

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53. The principal solution $\cot x = \sqrt{3}$ are

A. $\frac{\pi}{6}, \frac{5\pi}{6}$

B. $\frac{7\pi}{6}, \frac{11\pi}{6}$

C. $\frac{\pi}{6}, \frac{7\pi}{6}$

D. $\frac{5\pi}{6}, \frac{11\pi}{6}$

Answer: C

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54. $\cot x = -\sqrt{3}$

A. $\frac{\pi}{6}, \frac{5\pi}{6}$

B. $\frac{7\pi}{6}, \frac{11\pi}{6}$

C. $\frac{\pi}{6}, \frac{7\pi}{6}$

D. $\frac{5\pi}{6}, \frac{11\pi}{6}$

Answer: D

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55. Principal solutions of the equation $\sin 2x + \cos 2x = 0$, where $\pi < x < 2\pi$

A. $\frac{7\pi}{8}, \frac{11\pi}{8}$

B. $\frac{9\pi}{8}, \frac{13\pi}{8}$

C. $\frac{11\pi}{8}, \frac{15\pi}{8}$

D. $\frac{15\pi}{8}, \frac{19\pi}{8}$

Answer: C

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56. The principal solutions of $2\sin^2 x = 3\cos x$ are

A. $\frac{\pi}{3}, \frac{5\pi}{3}$

B. $\frac{\pi}{3}, \frac{2\pi}{3}$

C. $\frac{2\pi}{3}, \frac{4\pi}{3}$

D. $\frac{4\pi}{3}, \frac{5\pi}{3}$

Answer: A

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57. If $(2\cos x - 1)(3 + 2\cos x) = 0, 0 \leq x \leq 2\pi,$ then x=

A. $\frac{\pi}{3}$

B. $\frac{5\pi}{3}$

C. $\frac{\pi}{3}, \frac{5\pi}{3}, \cos^{-1}\left(\frac{-3}{2}\right)$

D. $\frac{\pi}{3}, \frac{5\pi}{3}$

Answer: D

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58. If $\sin x + \sin 4x + \sin 7x = 0$ and $0 < x < \pi$, then x=

A. $\frac{2\pi}{9}, \frac{\pi}{4}, \frac{\pi}{2}, \frac{2\pi}{3}, \frac{3\pi}{4}, \frac{8\pi}{9}$

B. $\frac{2\pi}{9}, \frac{\pi}{4}, \frac{4\pi}{9}, \frac{\pi}{2}, \frac{3\pi}{4}, \frac{8\pi}{9}$

C. $\frac{2\pi}{9}, \frac{4\pi}{9}, \frac{\pi}{2}, \frac{2\pi}{3}, \frac{3\pi}{4}, \frac{8\pi}{9}$

D. $\frac{\pi}{4}, \frac{5\pi}{12}, \frac{\pi}{2}, \frac{2\pi}{3}, \frac{3\pi}{4}, \frac{8\pi}{9}$

Answer: B

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59. The value of θ lying between 0 and $\frac{\pi}{2}$ and satisfying

$$\begin{vmatrix} 1+\sin^2\theta & \cos^2\theta & 4\sin 4\theta \\ \sin^2\theta & 1+\cos^2\theta & 4\sin 4\theta \\ \sin^2\theta & \cos^2\theta & 1+4\sin 4\theta \end{vmatrix} = 0$$

A. $\frac{\pi}{24}$

B. $\frac{5\pi}{24}$

C. $\frac{7\pi}{24}$ or $\frac{11\pi}{24}$

D. $\frac{7\pi}{24}$ or $\frac{5\pi}{24}$

Answer: C

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60. If $\cos^2 x + \sin x + 1 = 0$, then the value of x lies in the interval

A. $\left(\frac{\pi}{4}, \frac{3\pi}{4}\right)$

B. $\left(\frac{\pi}{4}, \frac{5\pi}{4}\right)$

C. $\left(\frac{5\pi}{4}, \frac{7\pi}{4}\right)$

D. $\frac{3\pi}{4}, \frac{5\pi}{4}$

Answer: C

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61. In $(0, 2\pi)$, the number of solutions of $\cos 2\theta = \sin\theta$ are

A. 1

B. 2

C. 3

D. 4

Answer: C

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62. In $(0, 2\pi)$, the number of solutions of $\tan\theta + \sec\theta = 2\cos\theta$ are

A. 0

B. 1

C. 2

D. 3

Answer: D

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63. In $(0, 3\pi)$, the number of solutions of $2\sin^2\theta + 5\sin\theta - 3 = 0$ are

A. 4

B. 3

C. 2

D. 1

Answer: A

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64. In $(0, 4\pi)$, the number of solutions of $2\sin^2\theta = \cos 2\theta$ are

A. 4

B. 2

C. 8

D. 6

Answer: C

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65. If $0 \leq x < 2\pi$, then the number of real values of x, which satisfy the equation $\cos x + \cos 2x + \cos 3x + \cos 4x = 0$;

A. 3

B. 5

C. 7

D. 9

Answer: C

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66. General solutions of $\sin 3x = 0$ is

A. $n\pi, n \in Z$

B. $2n\pi, n \in Z$

C. $\frac{n\pi}{3}, n \in Z$

D. $\frac{2n\pi}{3}, n \in Z$

Answer: C

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67. General solution of $\sin\left(\frac{3x}{2}\right) = 0$ is

A. $\frac{n\pi}{3}, n \in Z$

B. $\frac{2n\pi}{3}, n \in Z$

C. $n\pi, n \in Z$

D. $\frac{3n\pi}{2}, n \in Z$

Answer: C

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68. General solution of $\sin\left(x + \frac{\pi}{5}\right) = 0$ is

A. $n\pi + \frac{\pi}{5}, n \in Z$

B. $n\pi - \frac{\pi}{5}, n \in Z$

C. $2n\pi + \frac{\pi}{5}, n \in Z$

D. $2n\pi - \frac{\pi}{5}, n \in Z$

Answer: B

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69. General solution of $\cos 2x = 0$ is

A. $(2n-1)\frac{\pi}{2}, n \in Z$

B. $(2n-1)\frac{\pi}{4}, n \in Z$

C. $(2n+1)\frac{\pi}{2}, n \in Z$

D. $(2n+1)\frac{\pi}{4}, n \in Z$

Answer: D

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70. General solution of $\cos\left(\frac{5x}{2}\right) = 0$ is

A. $(4n+1)\frac{5\pi}{2}, n \in Z$

B. $(4n+1)\frac{2\pi}{5}, n \in Z$

C. $(4n+1)\frac{\pi}{2}, n \in Z$

D. $(4n+1)\frac{\pi}{5}, n \in Z$

Answer: D

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71. General solution of $\cos\left(x+\frac{\pi}{10}\right)=0$ is

A. $(2n+1)\frac{\pi}{2}-\frac{\pi}{10}, n\in Z$

B. $(2n+1)\frac{\pi}{2}+\frac{\pi}{10}, n\in Z$

C. $(2n+1)\frac{\pi}{2}-\frac{\pi}{5}, n\in Z$

D. $(2n+1)\frac{\pi}{2}+\frac{\pi}{5}, n\in Z$

Answer: A

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72. General solution of $\sin x=\frac{\sqrt{3}}{2}$ is

A. $n\pi+(-1)^n\frac{\pi}{3}, n\in Z$

B. $2n\pi + (-1)^n \frac{\pi}{3}, n \in Z$

C. $n\pi + (-1)^{n-1} \frac{\pi}{3}, n \in Z$

D. $n\pi + (-1)^{n+1} \frac{\pi}{3}, n \in Z$

Answer: A

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73. Find the general value of x for which $\sqrt{3}\ \text{cosec}\ x = 2$.

A. $n\pi + (-1)^{n-1} \frac{\pi}{3}, n \in Z$

B. $n\pi + (-1)^{n-1} \frac{2\pi}{3}, n \in Z$

C. $n\pi + (-1)^n \frac{\pi}{3}, n \in Z$

D. $n\pi + (-1)^n \frac{2\pi}{3}, n \in Z$

Answer: C

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74. General solution of $\sin x = \frac{-\sqrt{3}}{2}$ is

A. $n\pi + (-1)^n \frac{\pi}{3}, n \in Z$

B. $n\pi + (-1)^n \frac{5\pi}{3}, n \in Z$

C. $n\pi + (-1)^n \frac{7\pi}{3}, n \in Z$

D. $n\pi + (-1)^n \frac{4\pi}{3}, n \in Z$

Answer: D

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75. General solution of $\cos ecx = -\sqrt{2}$ is

A. $2n\pi + (-1)^n \frac{7\pi}{4}, n \in Z$

B. $2n\pi + (-1)^n \frac{5\pi}{4}, n \in Z$

C. $n\pi + (-1)^n \frac{7\pi}{4}, n \in Z$

D. $n\pi + (-1)^n \frac{5\pi}{4}, n \in Z$

Answer: D

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76. General solution of $\sin 2x = \frac{1}{2}$ is

A. $n\pi + (-1)^n \frac{\pi}{12}, n \in Z$

B. $n\pi + (-1)^n \frac{\pi}{6}, n \in Z$

C. $\frac{n\pi}{2} + (-1)^n \frac{\pi}{12}, n \in Z$

D. $\frac{n\pi}{2} + (-1)^n \frac{\pi}{6}, n \in Z$

Answer: C

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77. General solution of $\operatorname{cosec} 3x = \frac{-2}{\sqrt{3}}$ is

A. $\frac{n\pi}{3} + (-1)^n \frac{5\pi}{3}, n \in Z$

B. $\frac{n\pi}{3} + (-1)^n \frac{5\pi}{9}, n \in Z$

C. $\frac{n\pi}{3} + (-1)^n \frac{4\pi}{3}, n \in Z$

D. $\frac{n\pi}{3} + (-1)^n \frac{4\pi}{9}, n \in Z$

Answer: D

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78. General solution of $\sin 4x = \frac{\sqrt{3}}{2}$ is

A. $\frac{n\pi}{4} + (-1)^n \frac{\pi}{12}, n \in Z$

B. $\frac{n\pi}{4} + (-1)^n \frac{\pi}{3}, n \in Z$

C. $n\pi + (-1)^n \frac{\pi}{12}, n \in Z$

D. $n\pi + (-1)^n \frac{\pi}{3}, n \in Z$

Answer: A

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79. General solution of $1 - \cos x = \sin x \sin\left(\frac{x}{2}\right)$ is

A. $2n\pi, 4n\pi, n \in Z$

B. $n\pi, 2n\pi, n \in Z$

C. $n\pi, \frac{n\pi}{2}, n \in Z$

D. $\frac{n\pi}{3}, \frac{2n\pi}{3}, n \in Z$

Answer: A

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80. General solution of $\sec x - \cos ecx = \frac{4}{3}$ is

A. $n\pi - (-1)^n \sin^{-1}\left(\frac{3}{4}\right), n \in Z$

B. $n\pi - \frac{(-1)^n}{2}\sin^{-1}\left(\frac{3}{4}\right), n \in Z$

C. $\frac{n\pi}{2} - \frac{(-1)^n}{2}\sin^{-1}\left(\frac{3}{4}\right), n \in Z$

D. $\frac{n\pi}{2} - (-1)^n \sin^{-1}\left(\frac{3}{4}\right), n \in Z$

Answer: B

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81. General solution of $\sin^2 x + \sin x = 2$ is

A. $\frac{n\pi}{2} + (-1)^n \frac{\pi}{4}, n \in Z$

B. $\frac{n\pi}{2} + (-1)^n \frac{\pi}{2}, n \in Z$

C. $(n\pi) + (-1)^n \frac{3\pi}{2}, n \in Z$

D. $n\pi + (-1)^n \frac{\pi}{2}, n \in Z$

Answer: D

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82. General solution of $\tan x + \cot x = 2$ is

A. $\frac{n\pi}{2} + (-1)^n \frac{\pi}{4}, n \in Z$

B. $\frac{n\pi}{2} + (-1)^n \frac{\pi}{2}, n \in Z$

C. $n\pi + (-1)^n \frac{\pi}{4}, n \in Z$

D. $n\pi + (-1)^n \frac{\pi}{2}, n \in Z$

Answer: A

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83. The general solution of equation $3\tan(\theta - 15^o) = \tan(\theta + 15^o)$ is:

A. $\frac{n\pi}{2} + (-1)^n \frac{\pi}{4}, n \in Z$

B. $\frac{n\pi}{2} + (-1)^n \frac{\pi}{2}, n \in Z$

C. $2n\pi + \frac{\pi}{4}, n \in Z$

D. $2n\pi - \frac{\pi}{4}, n \in Z$

Answer: A

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84. General solution of $\cos x = 1$ is

A. $n\pi, n \in Z$

B. $2n\pi, n \in Z$

C. $3n\pi, n \in Z$

D. $4n\pi, n \in Z$

Answer: B

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85. General solution of $\cos x = \frac{-1}{2}$ is

A. $2n\pi \pm \frac{\pi}{3}, n \in Z$

B. $2n\pi \pm \frac{2\pi}{3}, n \in Z$

C. $n\pi \pm \frac{2\pi}{3}, n \in Z$

D. $3n\pi \pm \frac{4\pi}{3}, n \in Z$

Answer: B

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86. General solution of $\cos x = \frac{1}{\sqrt{2}}$ is

A. $n\pi + \frac{\pi}{4}, n \in Z$

B. $2n\pi + \frac{\pi}{4}, n \in Z$

C. $2n\pi - \frac{\pi}{4}, n \in Z$

D. $2n\pi \pm \frac{\pi}{4}, n \in Z$

Answer: D

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87. General solution of $\sec x = \sqrt{2}$ is

A. $2n\pi \pm \frac{7\pi}{4}, n \in Z$

B. $2n\pi \pm \frac{\pi}{4}, n \in Z$

C. $4n\pi \pm \frac{7\pi}{2}, n \in Z$

D. $4n\pi \pm \frac{\pi}{2}, n \in Z$

Answer: B

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88. General solution of $\sec x + \sqrt{2} = 0$ is

A. $2n\pi \pm \frac{\pi}{4}, n \in Z$

B. $2n\pi \pm \frac{3\pi}{4}, n \in Z$

C. $2n\pi \pm \frac{5\pi}{4}, n \in Z$

D. $2n\pi \pm \frac{7\pi}{4}, n \in Z$

Answer: B

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89. General solution of $2\cos 2x = -1$ is

A. $2n\pi \pm \frac{2\pi}{3}, n \in Z$

B. $2n\pi \pm \frac{3\pi}{2}, n \in Z$

C. $2n\pi \pm \frac{\pi}{3}, n \in Z$

D. $n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: D

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90. General solution of $\cos 3x = \frac{1}{\sqrt{2}}$ is

A. $\frac{2n\pi}{3} \pm \frac{\pi}{12}, n \in Z$

B. $\frac{n\pi}{3} \pm \frac{\pi}{12}, n \in Z$

C. $\frac{2n\pi}{3} \pm \frac{\pi}{4}$

D. $\frac{n\pi}{3} \pm \frac{\pi}{4}, n \in Z$

Answer: A

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91. General solution of $\sec 3x = -2$ is

A. $2(3n \pm 1)\frac{\pi}{3}, n \in Z$

B. $2(n \pm 3)\frac{\pi}{3}, n \in Z$

C. $2(3n \pm 1)\frac{\pi}{9}, n \in Z$

D. $2(n \pm 3)\frac{\pi}{9}, n \in Z$

Answer: C

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92. If $\cos p\theta = \cos q\theta, p \neq q,$ then

A. $\theta = 2n\pi, n \in Z$

B. $\theta = \frac{n\pi}{p+q}, n \in Z$

C. $\theta = \frac{2n\pi}{p \pm q}, n \in Z$

D. $\theta = \frac{n\pi}{p \pm q}, n \in Z$

Answer: C

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93. The general value of x obtained from the equation $\cos 2x = \sin \alpha$ is

A. $x = 2n\pi \pm \left(\frac{\pi}{2} - \alpha\right), n \in Z$

B. $x = \frac{n\pi + (-1)^n \alpha}{2}, n \in Z$

C. $x = n\pi \pm \left(\frac{\pi}{4} - \frac{\alpha}{2}\right), n \in Z$

D. $2x = \frac{\pi}{2} - \alpha$

Answer: C

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94. General solution of $\frac{1-\tan^2 x}{\sec^2 x} = \frac{1}{2}$ is

A. $n\pi + \frac{\pi}{6}, n \in Z$

B. $n\pi - \frac{\pi}{6}, n \in Z$

C. $n\pi \pm \frac{\pi}{6}, n \in Z$

D. $2n\pi \pm \frac{\pi}{6}, n \in Z$

Answer: C

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95. Find the general solution of :

$\cot x + \tan x = 2\,\text{cosec}\, x.$

A. $2n\pi \pm \frac{2\pi}{3}, n \in Z$

B. $2n\pi \pm \frac{4\pi}{3}, n \in Z$

C. $2n\pi \pm \frac{5\pi}{3}, n \in Z$

D. $2n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: D

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96. General solution of $\cos 2x + 3\cos x = 0$ is

A. $n\pi \pm \cos^{-1}\left(\frac{-3+\sqrt{17}}{4}\right), n \in Z$

B. $2n\pi \pm \cos^{-1}\left(\frac{-3+\sqrt{17}}{4}\right), n \in Z$

C. $2n\pi \pm \cos^{-1}\left(\frac{-3-\sqrt{17}}{4}\right), n \in Z$

D. $2n\pi \pm \cos^{-1}\left(\frac{-3+\sqrt{17}}{4}\right), n \in Z$

Answer: D

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97. General solution of $8\tan^2\left(\frac{x}{2}\right) = 1 + \sec x$ is

A. $2n\pi \pm \cos^{-1}\left(\frac{2}{3}\right), n \in Z$

B. $2n\pi \pm \cos^{-1}\left(\frac{1}{3}\right), n \in Z$

C. $n\pi \pm \cos^{-1}\left(\frac{2}{3}\right), n \in Z$

D. $n\pi \pm \cos^{-1}\left(\frac{1}{3}\right), n \in Z$

Answer: B

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98. General solution of $\frac{\cos 3x}{2\cos 2x - 1} = \frac{1}{2}$ is

A. $2n\pi \pm \frac{\pi}{6}, n \in Z$

B. $2n\pi \pm \frac{\pi}{4}, n \in Z$

C. $2n\pi \pm \frac{\pi}{3}, n \in Z$

D. $2n\pi \pm \frac{\pi}{2}, n \in Z$

Answer: C

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99. If $\begin{vmatrix} \cos x & \sin x & \cos x \\ -\sin x & \cos x & \sin x \\ -\cos x & -\sin x & \cos x \end{vmatrix} = 0$, then x=

A. $(2n+1)\frac{\pi}{2}, n \in Z$

B. $(2n+1)\frac{3\pi}{2}, n \in Z$

C. $(2n+1)\frac{\pi}{4}, n \in Z$

D. $(2n+1)\pi, n \in Z$

Answer: A

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100. If $\begin{vmatrix} \cos(A+B) & -\sin(A+B) & \cos 2B \\ \sin A & \cos A & \sin B \\ -\cos A & \sin A & \cos B \end{vmatrix} = 0$, then B=

A. $n\pi, n \in Z$

B. $2n\pi, n \in Z$

C. $(2n \pm 1)\frac{\pi}{2}, n \in Z$

D. $(2n\pi \pm 1)\pi, n \in Z$

Answer: A

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101. The general solution of $\sin^2 x - 2\cos x + \frac{1}{4} = 0$ is

A. $2n\pi \pm \frac{\pi}{6}, n \in Z$

B. $2n\pi \pm \frac{\pi}{3}, n \in Z$

C. $n\pi \pm \frac{\pi}{6}, n \in Z$

D. $n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: B

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102. General solution of $3\sin^2 x + 10\cos x - 6 = 0$ is

A. $2n\pi \pm \cos^{-1}\left(\frac{1}{3}\right), n \in Z$

B. $2n\pi \pm \cos^{-1}\left(\frac{2}{3}\right), n \in Z$

C. $n\pi \pm \cos^{-1}\left(\frac{1}{3}\right), n \in Z$

D. $n\pi \pm \cos^{-1}\left(\frac{2}{3}\right), n \in Z$

Answer: A

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103. The principal solution $\tan x = -1$ is

A. $n\pi + \frac{3\pi}{4}, n \in Z$

B. $n\pi - \frac{3\pi}{4}, n \in Z$

C. $n\pi + \frac{\pi}{4}, n \in Z$

D. $n\pi - \frac{\pi}{4}, n \in Z$

Answer: A

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104. $\tan x = \sqrt{3}$

A. $n\pi \pm \frac{\pi}{3}, n \in Z$

B. $n\pi - \frac{\pi}{3}, n \in Z$

C. $n\pi + \frac{\pi}{3}, n \in Z$

D. $2n\pi + \frac{\pi}{3}, n \in Z$

Answer: C

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105. $\cot x = -\sqrt{3}$

A. $n\pi + \frac{5\pi}{6}, n \in Z$

B. $n\pi + \frac{7\pi}{6}, n \in Z$

C. $n\pi + \frac{11\pi}{6}, n \in Z$

D. $n\pi + \frac{\pi}{6}, n \in Z$

Answer: A

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106. General solution of $\tan\left(\frac{2x}{3}\right) = \sqrt{3}$ is

A. $(2n+1)\frac{\pi}{3}, n \in Z$

B. $(3n+1)\frac{\pi}{3}, n \in Z$

C. $(2n+1)\frac{\pi}{2}, n \in Z$

D. $(3n+1)\frac{\pi}{2}, n \in Z$

Answer: D

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107. Find the general solution of each of the equations :

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

(ii) $\tan 3x = -1$

A. $\frac{n\pi}{3} + \frac{3\pi}{4}, n \in Z$

B. $n\pi + \frac{3\pi}{4}, n \in Z$

C. $\frac{n\pi}{3} + \frac{\pi}{4}, n \in Z$

D. $n\pi + \frac{\pi}{4}, n \in Z$

Answer: C

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108. General solution of $\cot 4x = -1$ is

A. $\frac{n\pi}{4} + \frac{3\pi}{4}, n \in Z$

B. $\frac{n\pi}{4} + \frac{3\pi}{16}, n \in Z$

C. $n\pi + \frac{3\pi}{4}, n \in Z$

D. $n\pi + \frac{3\pi}{16}, n \in Z$

Answer: B

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109. The general solution of $\tan\theta \tan 2\theta = 1$ is

A. $(2n+1)\frac{\pi}{2}, n \in Z$

B. $(2n+1)\frac{\pi}{6}, n \in Z$

C. $\left(2n \pm \frac{1}{2}\right)\frac{\pi}{3}, n \in Z$

D. $\left(n \pm \frac{1}{2}\right)\frac{\pi}{3}, n \in Z$

Answer: B

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110. General solution of $\cot x + \operatorname{cosec} x = \sqrt{3}$ is

A. $2n\pi + \frac{\pi}{6}, n \in Z$

B. $2n\pi + \frac{\pi}{3}, n \in Z$

C. $2n\pi + \frac{\pi}{4}, n \in Z$

D. $2n\pi + \frac{\pi}{2}, n \in Z$

Answer: B

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111. General solution of $\tan 5\theta = \cot 2\theta$ is

A. $\frac{n\pi}{7} + \frac{\pi}{2}, n \in Z$

B. $\frac{n\pi}{7} + \frac{\pi}{14}, n \in Z$

C. $\frac{n\pi}{7} + \frac{\pi}{7}, n \in Z$

D. $\frac{n\pi}{5} + \frac{\pi}{10}, n \in Z$

Answer: B

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112. If $\tan m\theta = \tan n\theta$, then the general values of θ are in

A. A.P.

B. G.P.

C. H.P.

D. A.G.P.

Answer: A

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113. General solution of $\tan\theta + \tan\left(\frac{\pi}{2} - \theta\right) = 2$ is

A. $n\pi + \frac{\pi}{8}, n \in Z$

B. $2n\pi + \frac{\pi}{8}, n \in Z$

C. $n\pi + \frac{\pi}{4}, n \in Z$

D. $2n\pi + \frac{\pi}{4}, n \in Z$

Answer: C

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114. If $\sin\left(\frac{\pi}{4}\cos\theta\right) = \cos\left(\frac{\pi}{4}\tan\theta\right)$, then θ is equal to

A. $n\pi \pm \frac{\pi}{3}, n \in Z$

B. $n\pi \pm \frac{\pi}{4}, n \in Z$

C. $n\pi + \frac{\pi}{3}, n \in Z$

D. $n\pi + \frac{\pi}{4}, n \in Z$

Answer: D

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115. The general solution of the equation $\tan x + \tan 2x + \tan x . \tan 2x = 1$ is

A. $n\pi + \frac{\pi}{4}, n \in Z$

B. $\frac{n\pi}{3} + \frac{\pi}{12}, n \in Z$

C. $n\pi + \frac{\pi}{12}, n \in Z$

D. $\frac{n\pi}{3} + \frac{\pi}{4}, n \in Z$

Answer: B

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116. The general solution of the equation $\tan x + \tan\left(x + \frac{\pi}{3}\right) + \tan\left(x + \frac{2\pi}{3}\right) = 3$ is

A. $(2n+1)\frac{\pi}{6}, n \in Z$

B. $(4n+1)\frac{\pi}{6}, n \in Z$

C. $(2n+1)\frac{\pi}{12}, n \in Z$

D. $(4n+1)\frac{\pi}{12}, n \in Z$

Answer: D

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117. General solution of $\frac{\tan 3x - 1}{\tan 3x + 1} = \sqrt{3}$ is

A. $\frac{n\pi}{3} - \frac{7\pi}{12}, n \in Z$

B. $\frac{n\pi}{3} + \frac{7\pi}{12}, n \in Z$

C. $\frac{n\pi}{3} - \frac{7\pi}{36}, n \in Z$

D. $\frac{n\pi}{3} + \frac{7\pi}{36}, n \in Z$

Answer: D

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118. General solution of $\sqrt{3}\tan 2\theta + \sqrt{3}\tan 3\theta + \tan 2\theta \tan 3\theta = 1$ is

A. $\left(n + \frac{1}{3}\right)\frac{\pi}{5}, n \in Z$

B. $\left(n + \frac{1}{6}\right)\frac{\pi}{5}, n \in Z$

C. $\left(n + \frac{1}{2}\right)\frac{\pi}{5}, n \in Z$

D. $\left(n \pm \frac{1}{6}\right)\frac{\pi}{5}, n \in Z$

Answer: B

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119. If $\tan\theta + \tan 2\theta + \sqrt{3}\tan\theta \tan 2\theta = \sqrt{3}$, then $\theta = \frac{n\pi}{3} + \frac{\pi}{9}$.

A. $(3n+1)\frac{\pi}{9}, n \in Z$

B. $(3n+1)\frac{\pi}{6}, n \in Z$

C. $(3n+1)\frac{\pi}{3}, n \in Z$

D. $(3n+1)\frac{\pi}{18}, n \in Z$

Answer: A

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120. In $(0, 6\pi)$, the number of solutions of the equation $\tan\theta + \tan 2\theta + \tan 3\theta = \tan\theta \cdot \tan 2\theta \cdot \tan 3\theta$ is/are

A. $\frac{n\pi}{2}, n \in Z$

B. $\frac{n\pi}{3}, n \in Z$

C. $\frac{n\pi}{4}, n \in Z$

D. $\frac{n\pi}{6}, n \in Z$

Answer: D

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121. The set of values of x for which $\frac{\tan 3x - \tan 2x}{1 + \tan 3x \tan 2x} = 1$ is

A. ϕ

B. $\left\{\frac{\pi}{4}\right\}$

C. $\left\{2n\pi + \frac{\pi}{4}, n = 1, 2, \ldots\right\}$

D. $\left\{n\pi + \frac{\pi}{4}, n = 1, 2, \ldots\right\}$

Answer: A

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122. General solution of $4\sin^2 x - 3 = 0$ is

A. $n\pi \pm \frac{\pi}{3}, n \in Z$

B. $n\pi \pm \frac{2\pi}{3}, n \in Z$

C. $n\pi \pm \frac{4\pi}{3}, n \in Z$

D. $n\pi \pm \frac{5\pi}{3}, n \in Z$

Answer: A

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123. General solution of $4\sin^2 x = 1$ is

A. $n\pi \pm \frac{5\pi}{6}, n \in Z$

B. $n\pi \pm \frac{7\pi}{6}, n \in Z$

C. $n\pi \pm \frac{\pi}{6}, n \in Z$

D. $n\pi \pm \frac{11\pi}{6}, n \in Z$

Answer: C

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124. The general solution of the equation $4\cos^2 x + 6\sin^2 x = 5$

A. $n\pi \pm \frac{\pi}{6}, n \in Z$

B. $n\pi \pm \frac{\pi}{4}, n \in Z$

C. $n\pi \pm \frac{\pi}{3}, n \in Z$

D. $n\pi \pm \frac{\pi}{2}, n \in Z$

Answer: B

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125. $\sin 3\alpha = 4\sin\alpha \sin(x+\alpha)\sin(x-\alpha)$

A. $n\pi \pm \frac{\pi}{6}, n \in Z$

B. $n\pi \pm \frac{\pi}{4}, n \in Z$

C. $n\pi \pm \frac{\pi}{3}, n \in Z$

D. $n\pi \pm \frac{\pi}{2}, n \in Z$

Answer: C

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126. Find general solution of $4\cos^2 x = 1$.

A. $n\pi \pm \frac{4\pi}{3}, n \in Z$

B. $n\pi \pm \frac{5\pi}{3}, n \in Z$

C. $n\pi \pm \frac{\pi}{3}, n \in Z$

D. $n\pi \pm \frac{2\pi}{3}, n \in Z$

Answer: C

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127. General solution of $3\sec^2 x = 4$ is

A. $n\pi \pm \frac{\pi}{6}, n \in Z$

B. $n\pi \pm \frac{5\pi}{6}, n \in Z$

C. $n\pi \pm \frac{7\pi}{6}, n \in Z$

D. $n\pi \pm \frac{11\pi}{6}, n \in Z$

Answer: A

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128. The general solution of the equation $\tan^2 x = 1$ is

A. $n\pi + \frac{\pi}{4}, n \in Z$

B. $n\pi - \frac{\pi}{4}, n \in Z$

C. $n\pi \pm \frac{\pi}{4}, n \in Z$

D. $2n\pi \pm \frac{\pi}{4}, n \in Z$

Answer: C

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129. General solution of $2\tan^2 x = \sec^2 x$ is

A. $n\pi - \frac{\pi}{4}, n \in Z$

B. $n\pi + \frac{\pi}{4}, n \in Z$

C. $n\pi \pm \frac{\pi}{4}, n \in Z$

D. $2n\pi \pm \frac{\pi}{4}, n \in Z$

Answer: C

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130. General solution of $\frac{1-\cos 2x}{1+\cos 2x} = 3$ is

A. $n\pi \pm \frac{\pi}{6}, n \in Z$

B. $n\pi \pm \frac{\pi}{3}, n \in Z$

C. $2n\pi \pm \frac{\pi}{6}, n \in Z$

D. $2n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: B

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131. General solution of $3\left(\sec^2 x + \tan^2 x\right) = 5$ is

A. $2n\pi \pm \frac{\pi}{3}, n \in Z$

B. $2n\pi \pm \frac{\pi}{6}, n \in Z$

C. $n\pi \pm \frac{\pi}{3}, n \in Z$

D. $2n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: D

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132. General solution of $\tan\left(\frac{\pi}{4} + x\right) + \tan\left(\frac{\pi}{4} - x\right) = 4$ is

A. $n\pi \pm \frac{\pi}{6}, n \in Z$

B. $n\pi \pm \frac{\pi}{4}, n \in Z$

C. $n\pi \pm \frac{\pi}{3}, n \in Z$

D. $n\pi \pm \frac{\pi}{2}, n \in Z$

Answer: A

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133. General solution of $\tan^2 x + \sec 2x = 1$ is

A. $n\pi, n\pi \pm \frac{\pi}{4}, n \in Z$

B. $n\pi, n\pi \pm \frac{2\pi}{3}, n \in Z$

C. $n\pi, n\pi \pm \frac{\pi}{3}, n \in Z$

D. $n\pi, n\pi \pm \frac{\pi}{6}, n \in Z$

Answer: C

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134. Find the general solution of :

$\cos x + \sin x = 1$

A. $2n\pi, 2n\pi - \frac{\pi}{2}$

B. $2n\pi, 2n\pi + \frac{\pi}{2}$

C. $2n\pi, 2n\pi - \frac{\pi}{4}$

D. $2n\pi, 2n\pi + \frac{\pi}{4}$

Answer: B

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135. Find the general solution of :

$\cos x + \sin x = 1$

A. $n\pi + (-1)^n \frac{\pi}{4} - \frac{\pi}{4}, n \in Z$

B. $n\pi + (-1)^n \frac{\pi}{4} + \frac{\pi}{4}, n \in Z$

C. $n\pi + (-1)^n \frac{\pi}{3} - \frac{\pi}{4}, n \in Z$

D. $n\pi + (-1)^n \frac{\pi}{6} - \frac{\pi}{4}, n \in Z$

Answer: A

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136. General solution of $\cos x - \sin x = 1$ is

A. $2n\pi, 2n\pi - \frac{\pi}{2}, n \in Z$

B. $2n\pi, 2n\pi + \frac{\pi}{2}, n \in Z$

C. $2n\pi, 2n\pi - \frac{\pi}{4}, n \in Z$

D. $2n\pi, 2n\pi + \frac{\pi}{4}, n \in Z$

Answer: A

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137. Find the general solution of :

$\cos x - \sin x = -1$

A. $2n\pi + \frac{\pi}{4}, 2n\pi - \pi, n \in Z$

B. $2n\pi - \frac{\pi}{2}, 2n\pi + \pi, n \in Z$

C. $2n\pi + \frac{\pi}{2}, 2n\pi - \pi, n \in Z$

D. $2n\pi + \frac{\pi}{4}, 2n\pi - \pi, n \in Z$

Answer: C

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138. Find the general solution of :

$\sqrt{3}\cos x - \sin x = 1$

A. $2n\pi + \frac{\pi}{6}, 2n\pi + \frac{\pi}{2}, n \in Z$

B. $2n\pi - \frac{\pi}{6}, 2n\pi - \frac{\pi}{2}, n \in Z$

C. $2n\pi + \frac{\pi}{6}, 2n\pi - \frac{\pi}{2}, n \in Z$

D. $2n\pi - \frac{\pi}{6}, 2n\pi + \frac{\pi}{2}, n \in Z$

Answer: C

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139. General solution of $\sqrt{3}\cos x + \sin x = \sqrt{2}$ is

A. $n\pi + (-1)^n \frac{\pi}{4} - \frac{\pi}{6}, n \in Z$

B. $n\pi + (-1)^n \frac{\pi}{4} + \frac{\pi}{6}, n \in Z$

C. $n\pi + (-1)^n \frac{\pi}{4} - \frac{\pi}{3}, n \in Z$

D. $n\pi + (-1)^n \frac{\pi}{4} + \frac{\pi}{3}, n \in Z$

Answer: C

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140. General solution of $\sin x + \cos x = \sqrt{2}\cos\alpha$ is

A. $2n\pi \pm \alpha + \frac{\pi}{3}, n \in Z$

B. $2n\pi \pm \alpha - \frac{\pi}{4}, n \in Z$

C. $2n\pi \pm \alpha + \frac{\pi}{6}, n \in Z$

D. $2n\pi \pm \alpha + \frac{\pi}{4}, n \in Z$

Answer: D

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141. General solution of $\sqrt{2}\sec x + \tan x = 1$ is

A. $2n\pi + \frac{\pi}{4}, n \in Z$

B. $2n\pi - \frac{\pi}{4}, n \in Z$

C. $2n\pi + \frac{\pi}{8}, n \in Z$

D. $2n\pi - \frac{\pi}{8}, n \in Z$

Answer: B

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142. General solution of $\sqrt{2}\cos ecx + \cot x = \sqrt{3}$ is

A. $2n\pi + \frac{\pi}{6} \pm \frac{3\pi}{4}, n \in Z$

B. $2n\pi - \frac{\pi}{6} \pm \frac{3\pi}{4}, n \in Z$

C. $2n\pi + \frac{\pi}{3} \pm \frac{3\pi}{4}, n \in Z$

D. $2n\pi - \frac{\pi}{3} \pm \frac{3\pi}{4}, n \in Z$

Answer: D

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143. find the general solution of the equation $\left(\sqrt{3}-1\right)\sin\theta + \left(\sqrt{3}+1\right)\cos\theta = 2$

A. $2n\pi \pm \frac{\pi}{4} - \frac{\pi}{12}, n \in Z$

B. $2n\pi \pm \frac{\pi}{12} - \frac{\pi}{4}, n \in Z$

C. $2n\pi \pm \frac{\pi}{4} + \frac{\pi}{12}, n \in Z$

D. $2n\pi \pm \frac{\pi}{12} + \frac{\pi}{4}, n \in Z$

Answer: C

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144. General solution of $\sin^3 x + \cos^2 x + \sin x \cos x = 1$ is

A. $n\pi, n\pi \pm \frac{\pi}{2}, n \in Z$

B. $2n\pi, 2n\pi \pm \frac{\pi}{2}, n \in Z$

C. $n\pi, n\pi \pm \frac{\pi}{4}, n \in Z$

D. $2n\pi, 2n\pi \pm \frac{\pi}{4}, n \in Z$

Answer: B

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145. (i) $\cos 3x = \cos 2x$

(ii) $\cos 5x = \sin 3x$

(iii) $\cos mx = \sin nx$

A. $\frac{n\pi}{4} + \frac{\pi}{16}, n\pi - \frac{\pi}{4}, n \in Z$

B. $\frac{n\pi}{4} - \frac{\pi}{16}, n\pi + \frac{\pi}{4}, n \in Z$

C. $\frac{n\pi}{4} - \frac{\pi}{4}, n\pi - \frac{\pi}{16}, n \in Z$

D. $\frac{n\pi}{4} - \frac{\pi}{4}, n\pi + \frac{\pi}{16}, n \in Z$

Answer: A

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146. Find the general solution for each of the following equations :

(i) $\cos 4x = \cos 2x$

(ii) $\cos 3x = \sin 2x$

(iii) $\sin 3x + \cos 2x = 0$

(iv) $\sin mx + \sin nx = 0$

A. $\frac{2n\pi}{5} - \frac{\pi}{10}, 2n\pi + \frac{\pi}{2}, n \in Z$

B. $\frac{2n\pi}{5} - \frac{\pi}{2}, 2n\pi + \frac{\pi}{10}, n \in Z$

C. $\frac{2n\pi}{5} + \frac{\pi}{2}, 2n\pi - \frac{\pi}{10}, n \in Z$

D. $\frac{2n\pi}{5} + \frac{\pi}{10}, 2n\pi - \frac{\pi}{2}, n \in Z$

Answer: D

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147. Find the general solution for each of the following equations :

(i) $\cos 4x = \cos 2x$

(ii) $\cos 3x = \sin 2x$

(iii) $\sin 3x + \cos 2x = 0$

(iv) $\sin mx + \sin nx = 0$

A. $\frac{k\pi}{m+n}, \left(\frac{2k-1}{m-n}\right)\pi, k \in Z$

B. $\frac{k\pi}{m-n}, \left(\frac{2k-1}{m+n}\right)\pi, k \in Z$

C. $\frac{2k\pi}{m+n}, \left(\frac{2k-1}{m-n}\right)\pi, k \in Z$

D. $\frac{2k\pi}{m-n}, \left(\frac{2k-1}{m+n}\right)\pi, k \in Z$

Answer: C

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148. General solution of $\cos 3x = \cos 2x$ is

A. $n\pi, \frac{n\pi}{5}, n \in Z$

B. $2n\pi, \frac{2n\pi}{5}, n \in Z$

C. $n\pi, \frac{2n\pi}{5}, n \in Z$

D. $2n\pi, \frac{n\pi}{5}, n \in Z$

Answer: B

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149. Find the general solution : $\cos 4x = \cos 2x$

A. $2n\pi, \frac{n\pi}{3}, n \in Z$

B. $n\pi, \frac{2n\pi}{3}, n \in Z$

C. $2n\pi, \frac{2n\pi}{3}, n \in Z$

D. $n\pi, \frac{n\pi}{3}, n \in Z$

Answer: D

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150. Find the most general solution of the following $\sec 4x - \sec 2x = 2$

A. $(2n+1)\frac{\pi}{10}, (2n+1)\frac{\pi}{2}, n \in Z$

B. $(2n+1)\frac{\pi}{10}, (2n+1)\frac{\pi}{5}, n \in Z$

C. $(2n+1)\frac{\pi}{15}, (2n+1)\frac{\pi}{5}, n \in Z$

D. $(2n+1)\frac{\pi}{6}, (2n+1)\frac{\pi}{3}, n \in Z$

Answer: A

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151. $\sin x + \sin 3x + \sin 5x = 0$

A. $\frac{n\pi}{3}, n\pi \pm \frac{2\pi}{3}, n \in Z$

B. $\frac{n\pi}{3}, n\pi \pm \frac{\pi}{3}, n \in Z$

C. $\frac{n\pi}{3}, 2n\pi \pm \frac{\pi}{3}, n \in Z$

D. $\frac{n\pi}{3}, 2n\pi \pm \frac{2\pi}{3}, n \in Z$

Answer: B

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152. Find the general solution of the equation $\sin 2x + \sin 4x + \sin 6x = 0.$

A. $\frac{n\pi}{2}, n\pi \pm \frac{2\pi}{3}, n \in Z$

B. $\frac{n\pi}{2}, n\pi \pm \frac{\pi}{3}, n \in Z$

C. $\frac{n\pi}{4}, n\pi \pm \frac{2\pi}{3}, n \in Z$

D. $\frac{n\pi}{4}, n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: D

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153. $4\sin x\cos x + 2\sin x + 2\cos x + 1 = 0$

A. $n\pi + (-1)^n \frac{11\pi}{6}, 2n\pi \pm \frac{2\pi}{3}, n \in Z$

B. $n\pi + (-1)^n \frac{7\pi}{6}, n\pi \pm \frac{\pi}{3}, n \in Z$

C. $n\pi + (-1)^n \frac{7\pi}{6}, 2n\pi \pm \frac{4\pi}{3}, n \in Z$

D. $n\pi + (-1)^n \frac{11\pi}{6}, 2n\pi \pm \frac{4\pi}{3}, n \in Z$

Answer: B

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154. Find the general solution : $\cos 3x + \cos x \cos 2x = 0$

A. $2n\pi \pm \frac{\pi}{2}, 2n\pi \pm \frac{2\pi}{3}, n \in Z$

B. $2n\pi \pm \frac{\pi}{2}, n\pi \pm \frac{2\pi}{3}, n \in Z$

C. $n\pi \pm \frac{\pi}{4}, 2n\pi \pm \frac{2\pi}{3}, n \in Z$

D. $n\pi \pm \frac{\pi}{4}, n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: C

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155. General solution of $\sin 2x + \sin 4x = \sin 3x$ is

A. $\frac{n\pi}{6}, 2n\pi \pm \frac{\pi}{3}, n \in Z$

B. $\frac{n\pi}{3}, 2n\pi \pm \frac{\pi}{3}, n \in Z$

C. $\frac{n\pi}{3}, 2n\pi \pm \frac{\pi}{6}, n \in Z$

D. $\frac{n\pi}{6}, 2n\pi \pm \frac{\pi}{6}, n \in Z$

Answer: B

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156. General solution of $\cos 7x = \cos x - \sin 4x$ is

A. $\frac{n\pi}{4}, \frac{n\pi}{3} + (-1)^n \frac{\pi}{18}, n \in Z$

B. $\frac{n\pi}{3}, \frac{n\pi}{4} + (-1)^n \frac{\pi}{18}, n \in Z$

C. $\frac{n\pi}{4}, \frac{n\pi}{3} + (-1)^n \frac{\pi}{6}, n \in Z$

D. $\frac{n\pi}{4}, \frac{n\pi}{3} \pm (-1)^n \frac{\pi}{18}, n \in Z$

Answer: A

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157. General solution of $\cos 2x = \sqrt{2}(\cos x - \sin x)$ is

A. $n\pi + \frac{\pi}{2}, 2n\pi + \frac{\pi}{4}, n \in Z$

B. $n\pi + \frac{\pi}{4}, 2n\pi + \frac{\pi}{4}, n \in Z$

C. $n\pi + \frac{\pi}{4}, 2n\pi + \frac{\pi}{2}, n \in Z$

D. $n\pi + \frac{\pi}{2}, 2n\pi + \frac{\pi}{2}, n \in Z$

Answer: B

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158. Find the general solution of $\sin x = \tan x$

A. $n\pi, 2n\pi, n \in Z$

B. $n\pi, 3n\pi, n \in Z$

C. $2n\pi, 3n\pi, n \in Z$

D. $2n\pi, 4n\pi, n \in Z$

Answer: A

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159. $\sin x \tan x - 1 = \tan x - \sin x$

A. $2n\pi \pm \frac{3\pi}{4}, n\pi + (-1)^n \frac{\pi}{2}, n \in Z$

B. $n\pi \pm \frac{3\pi}{4}, n\pi + (-1)^n \frac{\pi}{2}, n \in Z$

C. $2n\pi + \frac{\pi}{4}, n\pi + (-1)^n \frac{\pi}{2}, n \in Z$

D. $n\pi + \frac{\pi}{4}, n\pi + (-1)^n \frac{\pi}{2}, n \in Z$

Answer: B

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160. $\tan x + \tan 2x = \tan 3x$

A. $n\pi, \frac{n\pi}{4}, n \in Z$

B. $n\pi, \frac{n\pi}{2}, n \in Z$

C. $n\pi, \frac{n\pi}{3}, n \in Z$

D. $n\pi, \frac{n\pi}{6}, n \in Z$

Answer: C

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161. tanx + tan2x + tan3x = 0

A. $\frac{n\pi}{2}, n\pi \pm \tan^{-1}\left(\frac{1}{2}\right), n \in Z$

B. $\frac{n\pi}{2}, n\pi \pm \tan^{-1}\left(\frac{1}{\sqrt{2}}\right), n \in Z$

C. $\frac{n\pi}{3}, n\pi \pm \tan^{-1}\left(\frac{1}{2}\right), n \in Z$

D. $\frac{n\pi}{3}, n\pi \pm \tan^{-1}\left(\frac{1}{\sqrt{2}}\right), n \in Z$

Answer: D

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162. $\tan^3 x - 3\tan x = 0$

A. $n\pi, n\pi \pm \frac{2\pi}{3}, n \in Z$

B. $2n\pi, 2n\pi \pm \frac{2\pi}{3}, n \in Z$

C. $n\pi, n\pi \pm \frac{\pi}{3}, n \in Z$

D. $n\pi, 2n\pi \pm \frac{\pi}{3}, n \in Z$

Answer: C

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163. Find the general solution : $\sec^2 2x = 1 - \tan 2x$

A. $n\pi, \frac{n\pi}{2} + \frac{3\pi}{8}, n \in Z$

B. $\frac{n\pi}{2}, \frac{n\pi}{2} + \frac{3\pi}{8}, n \in Z$

C. $\frac{n\pi}{2}, n\pi + \frac{3\pi}{8}, n \in Z$

D. $n\pi, n\pi + \frac{3\pi}{8}, n \in Z$

Answer: B

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164. Find the general solution of :

$2\tan x - \cot x + 1 = 0.$

A. $n\pi + \frac{3\pi}{4}, n\pi + \tan^{-1}\left(\frac{1}{2}\right), n \in Z$

B. $n\pi + \frac{7\pi}{4}, n\pi + \tan^{-1}\left(\frac{1}{2}\right), n \in Z$

C. $n\pi + \frac{3\pi}{4}, n\pi - \tan^{-1}\left(\frac{1}{2}\right), n \in Z$

D. $n\pi + \frac{7\pi}{4}, n\pi - \tan^{-1}\left(\frac{1}{2}\right), n \in Z$

Answer: A

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165. General solution of $\cot^2 x - \tan^2 x = 4\cot 2x$ is

A. $n\pi \pm \frac{\pi}{3}, n \in Z$

B. $n\pi \pm \frac{\pi}{2}, n \in Z$

C. $n\pi \pm \frac{\pi}{6}, n \in Z$

D. $n\pi \pm \frac{\pi}{4}, n \in Z$

Answer: D

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166. If $\tan^2\theta - (1+\sqrt{3})\tan\theta + \sqrt{3} = 0$, then the general value of theta is

A. $n\pi + \frac{\pi}{4}, n\pi + \frac{\pi}{3}, n \in Z$

B. $n\pi + \frac{5\pi}{4}, n\pi + \frac{\pi}{3}, n \in Z$

C. $2n\pi + \frac{\pi}{4}, n\pi + \frac{\pi}{3}, n \in Z$

D. $n\pi + \frac{\pi}{4}, 2n\pi + \frac{\pi}{3}, n \in Z$

Answer: A

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167. The most general values of x satisfying the equation $\sin x = \sin\alpha$ and $\cos\theta = \cos\alpha$ is

A. $n\pi - \alpha, n \in Z$

B. $n\pi + \alpha, n \in Z$

C. $2n\pi - \alpha, n \in Z$

D. $2n\pi + \alpha, n \in Z$

Answer: D

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168. The most general value of θ satisfying both the equations $\sin\theta = \frac{1}{2} : \tan\theta = \frac{1}{\sqrt{3}}$ is

A. $n\pi + (-1)^n \frac{\pi}{6}, n \in Z$

B. $2n\pi + \frac{7\pi}{6}, n \in Z$

C. $n\pi - \frac{\pi}{6}, n \in Z$

D. $2n\pi \pm \frac{\pi}{6}, n \in Z$

Answer: B

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169. Find the most general value of θ satisfyingn the equation $\tan\theta = -1$ and $\cos\theta = \frac{1}{\sqrt{2}}$.

A. $n\pi + \frac{7\pi}{4}, n \in Z$

B. $n\pi + (-1)^n \frac{7\pi}{4}, n \in Z$

C. $2n\pi + \frac{7\pi}{4}, n \in Z$

D. $2n\pi + (-1)^n \frac{7\pi}{4}, n \in Z$

Answer: C

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170. Find common roots of the equations $2\sin^2 x + \sin^2 2x = 2 and \sin 2x + \cos 2x = \tan x$.

A. $x = (2n+1)\frac{\pi}{4}, n \in Z$

B. $x = (2n+1)\frac{\pi}{6}, n \in Z$

C. $x = (2n+1)\frac{\pi}{3}, n \in Z$

D. $x = (2n+1)\frac{\pi}{2}, n \in Z$

Answer: A

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171. The cartesian co-ordinates of point, which polar co-cordinats=es are $\left(2, \frac{\pi}{4}\right)$ are

A. $(\sqrt{2}, \sqrt{2})$

B. $(2, 2)$

C. $\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$

D. $\left(\frac{1}{2}, \frac{1}{2}\right)$

Answer: A

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172. The cartesian co-ordinates of point, whose polar co-ordinates are $\left(\sqrt{2}, \frac{\pi}{4}\right)$ are

A. $(1, -1)$

B. $(-1, 0)$

C. $(1, 1)$

D. $(\sqrt{2}, \sqrt{2})$

Answer: C

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173. The cartesian co-ordinates of a point, whose polar co-ordinates are $\left(4, \frac{\pi}{2}\right)$ are

A. $(0, 2)$

B. $(0, 4)$

C. $(2, 0)$

D. $(4, 0)$

Answer: B

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174. The cartesian co-ordinates of a point, whose polar co-ordinates are $\left(\frac{3}{4}, 135^\circ\right)$ are

A. $\left(\frac{-3}{4\sqrt{2}}, \frac{-3}{4\sqrt{2}}\right)$

B. $\left(\frac{3}{4\sqrt{2}}, \frac{3}{4\sqrt{2}}\right)$

C. $\left(\frac{-3}{4\sqrt{2}}, \frac{3}{4\sqrt{2}}\right)$

D. $\left(\frac{3}{4\sqrt{2}}, \frac{-3}{4\sqrt{2}}\right)$

Answer: C

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175. The cartesian co-ordinates of a point, whose polar co-ordinates are $\left(\frac{1}{2}, 210^\circ\right)$ are

A. $\left(\frac{-\sqrt{3}}{4}, \frac{1}{4}\right)$

B. $\left(\frac{\sqrt{3}}{4}, \frac{-1}{4}\right)$

C. $\left(\frac{-\sqrt{3}}{4}, \frac{-1}{4}\right)$

D. $\left(\frac{\sqrt{3}}{4}, \frac{1}{4}\right)$

Answer: C

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176. The polar co-ordinates of the point whose cartesian co-ordinates are $(1, \sqrt{3})$, are

A. $\left(2, , -\frac{\pi}{3}\right)$

B. $\left(2, \frac{\pi}{3}\right)$

C. $\left(2, \frac{4\pi}{3}\right)$

D. $\left(2, \frac{2\pi}{3}\right)$

Answer: B

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177. The polar co-ordinates of the point whose cartesian co-ordinates are $(\sqrt{2}, \sqrt{2})$, are

A. $\left(2, \frac{7\pi}{4}\right)$

B. $\left(2, \frac{5\pi}{4}\right)$

C. $\left(2, \frac{3\pi}{4}\right)$

D. $\left(2, \frac{\pi}{4}\right)$

Answer: D

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178. The polar co-ordinates of the point whose cartesian co-ordinates are $\left(\frac{3}{2}, \frac{3\sqrt{3}}{2}\right)$, are

A. $\left(3, \frac{\pi}{3}\right)$

B. $\left(3, \frac{2\pi}{3}\right)$

C. $\left(3, \frac{4\pi}{3}\right)$

D. $\left(3, \frac{5\pi}{3}\right)$

Answer: A

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179. The polar co-ordinates of the point whose cartesian co-ordinates are $\left(\frac{1}{\sqrt{2}}, \frac{-1}{\sqrt{2}}\right)$, are

A. $\left(1, \frac{7\pi}{4}\right)$

B. $\left(1, \frac{3\pi}{4}\right)$

C. $\left(1, \frac{5\pi}{4}\right)$

D. $\left(1, \frac{\pi}{4}\right)$

Answer: A

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180. If $\left(-\sqrt{2}, \sqrt{2}\right)$ are cartesian co-ordinates off the point, then its polar co-ordinates are . . .

A. $\left(2, \frac{7\pi}{4}\right)$

B. $\left(2, \frac{5\pi}{4}\right)$

C. $\left(2, \frac{3\pi}{4}\right)$

D. $\left(2, \frac{\pi}{4}\right)$

Answer: C

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181. The polar coordinates of the point whose cartesian coodinates are $\left(-\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right)$ are

A. $\left(1, \frac{\pi}{4}\right)$

B. $\left(1, \frac{3\pi}{4}\right)$

C. $\left(1, \frac{7\pi}{4}\right)$

D. $\left(1, \frac{5\pi}{4}\right)$

Answer: D

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182. The polar co-ordinates of the point whose cartesian co-ordinates are $(5, 0)$, are

A. $(-5, 0)$

B. $(-5, \pi)$

C. $(5, 0)$

D. $(5, \pi)$

Answer: C

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183. The polar co-ordinates of the point whose cartesian co-ordinates are $(-3, 0)$, are

A. $(-3, \pi)$

B. $(3, \pi)$

C. $\left(-3, \frac{\pi}{2}\right)$

D. $\left(3, \frac{\pi}{2}\right)$

Answer: B

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184. The polar co-ordinates of the point whose cartesian co-ordinates are $\left(0, \frac{1}{2}\right)$, are

A. $\left(2, \frac{\pi}{2}\right)$

B. $\left(2, \frac{3\pi}{2}\right)$

C. $\left(\frac{1}{2}, \frac{\pi}{2}\right)$

D. $\left(\frac{1}{2}, \frac{3\pi}{2}\right)$

Answer: D

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185. The polar co-ordinates of the point whose cartesian co-ordinates are $(0, -2)$, are

A. $\left(-2, \frac{\pi}{2}\right)$

B. $\left(-2, \frac{3\pi}{2}\right)$

C. $\left(2, \frac{\pi}{2}\right)$

D. $\left(2, \frac{3\pi}{2}\right)$

Answer: D

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186. In ABC, $=$ if $(a+b+c)(a-b+c)=3ac$, then find $\angle B$.

A. $\angle B = 30^\circ$

B. $\angle B = 60^\circ$

C. $\angle B = 100^\circ$

D. $\angle B = 90^\circ$

Answer: B

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187. In $\triangle ABC$, if a=2,b=3 and $\sin A = \frac{2}{3}$, then $\angle B =$

A. 30°

B. 45°

C. 60°

D. 90°

Answer: D

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188. The sides of a right angled triangle arein $A.\ P.$, then they are in the ratio

A. $1:2:3$

B. $2:3:4$

C. $3:4:5$

D. $4:5:6$

Answer: C

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189. In $\triangle ABC$, if $\angle A = 45^\circ, \angle B = 60^\circ, \angle C = 75^\circ$, then $a : b : c =$

A. $3 : \sqrt{6} : \sqrt{3} + 1$

B. $\sqrt{6} : 3 : \sqrt{3} + 1$

C. $2 : \sqrt{6} : \sqrt{3} + 1$

D. $\sqrt{6} : 2 : \sqrt{3} + 1$

Answer: C

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190. The sides of a triangle are in the ratio $1 : \sqrt{3} : 2$. Then the angles are in the ratio

A. $1 : \sqrt{2} : 3$

B. $1 : \sqrt{3} : 2$

C. $\sqrt{2}:\sqrt{3}:3$

D. $1:\sqrt{3}:3$

Answer: B

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191. The ratio of the sides of a triangle ABC is $1:\sqrt{3}:2$. The ratio $A:B:C$ is

A. $3:\sqrt{2}:1$

B. $1:\sqrt{3}:2$

C. $3:5:2$

D. $1:2:3$

Answer: D

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192. If the angles of a triangle are in the ratio $1:3:5$ then the angle greatest angle is

A. $\frac{5\pi}{9}$

B. $\frac{2\pi}{9}$

C. $\frac{7\pi}{9}$

D. $\frac{11\pi}{9}$

Answer: A

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193. In $\triangle ABC$, if $\angle C = 90^\circ$ then $\tan A + \tan B$=

A. $\frac{a^2}{bc}$

B. $\frac{b^2}{ca}$

C. $\frac{c^2}{ab}$

D. $a + b$

Answer: C

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194. In $\triangle ABC$, if $\cos A = \sin B - \cos C$, then the triangle is

A. a right angled

B. an isosceles

C. an equilateral

D. a scalene

Answer: A

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195. In $\triangle ABC$, If $a = \sqrt{3} + 1, b = \sqrt{3} + 1, \angle C = 60^\circ$, then the triangle is

A. isosceles

B. equilateral

C. right angled

D. right angled isosceles

Answer: B

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196. In $\triangle ABC$, If $\cos A + \cos B + \cos C = \frac{3}{2}$, then the triangle is

A. isosceles

B. right angled

C. equilateral

D. a scalene

Answer: C

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197. If $\cos^2 A + \cos^2 B + \cos^2 C = 1$, then $\triangle ABC$ is

A. equilateral

B. isosceles

C. right angled

D. right angled isosceles

Answer: D

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198. In $\triangle ABC$, If the angles are in A.P., and $b : c = \sqrt{3} : \sqrt{2}$, then $\angle A, \angle B, \angle C$ are

A. $30^\circ, 60^\circ, 90^\circ$

B. $50^\circ, 60^\circ, 70^\circ$

C. $75^\circ, 60^\circ, 45^\circ$

D. $15^\circ, 60^\circ, 105^\circ$

Answer: C

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199. In $\triangle ABC$, If $\angle A = 25^\circ, \angle B = 85^\circ$ and $c = 3, 4$, then a=

A. 3.0604

B. 3.604

C. 1.0529

D. 1.529

Answer: D

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200. In $\triangle ABC$, If $\angle A = 25^\circ, \angle B = 85^\circ$ and $c = 3, 4$, then b=

A. 3.0604

B. 3.604

C. 1.0529

D. 1.529

Answer: B

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201. In $\triangle ABC$, if $a = 72, \angle B = 108^\circ, \angle A = 25^\circ$, then b=

A. 162.04

B. 162.14

C. 124.61

D. 124.16

Answer: A

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202. In $\triangle ABC$, if $a = 72, \angle B = 108^\circ, \angle A = 25^\circ$, then c=

A. 162.04

B. 162.14

C. 124.61

D. 124.16

Answer: C

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203. In $\triangle ABC$, if $a = \sqrt{3} + 1, b = \sqrt{3} - 1$ and $\angle C = 60^\circ$, then c=

A. $\sqrt{6}$

B. $-\sqrt{6}$

C. 2

D. 4

Answer: A

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204. In $\triangle ABC$, if $a = \sqrt{3}+1, b = \sqrt{3}-1$ and $\angle C = 60^\circ$, then $\angle A$ =

A. 45°

B. 105°

C. 15°

D. 60°

Answer: B

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205. In $\triangle ABC$, if $a = \sqrt{3} + 1, b = \sqrt{3} - 1$ and $\angle C = 60^\circ$, then $\angle B$ =

A. 45°

B. 105°

C. 15°

D. 60°

Answer: C

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206. If $\cos A = \frac{3}{5}, \cos B = \frac{5}{13}, \cos C = \frac{4}{5}$, then the ratio of sides of triangle is

A. $4:5:3$

B. $19:13:15$

C. $13:60:3$

D. $52:60:39$

Answer: D

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207. The angles of a triangle ABC are in $A\dot{P}$ and it is being given that $b:c=\sqrt{3}:\sqrt{2}$, find $\angle A$.

A. 30°

B. 45°

C. 60°

D. 75°

Answer: D

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208. In a triangle $ABC, a = 5, b = 7$ and $\sin A = \frac{3}{4}$ how many such triangles are possible.

A. 0

B. 1

C. 2

D. Infinite

Answer: A

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209. In $\triangle ABC$, if $c^2 \sin A \sin B = ab,$ then the triangle is

A. an equilateral

B. an isosceles

C. a right angled

D. a scalene

Answer: C

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210. In triangle ABC, if $\sin^2 A + \sin^2 B = \sin^2 C$, then the triangle is

A. an equilateral

B. an isosceles

C. a right angled

D. a scalene

Answer: C

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211. In a right angled triangle ABC, write the value of $\sin^2 A + \sin^2 B + \sin^2 C$

A. 2

B. 1

C. -1

D. 0

Answer: A

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212. In $\triangle ABC, a(\sin B - \sin C) + b(\sin C - \sin A) + c(\sin A - \sin B) =$

A. 0

B. abc

C. $a + b + c$

D. $2abc$

Answer: A

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213. In $\triangle ABC$, $\frac{\cos 2A}{a^2} - \frac{\cos 2B}{b^2} =$

A. $b^2 - a^2$

B. $a^2 - b^2$

C. $\frac{1}{b^2} - \frac{1}{a^2}$

D. $\frac{1}{a^2} - \frac{1}{b^2}$

Answer: D

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214.

$a^2\left(\cos^2 B - \cos^2 C\right) + b^2\left(\cos^2 C - \cos^2 A\right) + c^2\left(\cos^2 A - \cos^2 B\right) = 0$

.

A. $a^2c^2 - a^2b^2$

B. $a^2b^2 - b^2c^2$

C. $b^2c^2 - a^2c^2$

D. 0

Answer: D

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215. In $\triangle ABC$, $\frac{\sin B}{\sin(A+B)}$ =

A. $\frac{b}{a+b}$

B. $\frac{b}{c}$

C. $\frac{-b}{c}$

D. $\frac{c}{b}$

Answer: B

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216. In any ΔABC, prove that $a\sin(B-C)+b\sin(C-A)+c\sin(A-B)=0$.

A. 0

B. $a+b+c$

C. $a^2+b^2+c^2$

D. $2\left(a^2+b^2+c^2\right)$

Answer: A

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217. $\ln\Delta ABC$, $b^2\cos 2A-a^2\cos 2B=$

A. 0

B. a^2+b^2

C. a^2-b^2

D. $b^2 - a^2$

Answer: D

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218. In $\triangle ABC$, $\dfrac{\cos\left(\frac{B-C}{2}\right)}{\sin\left(\frac{A}{2}\right)} =$

A. $\dfrac{b-c}{a}$

B. $\dfrac{b+c}{a}$

C. $\dfrac{a}{b-c}$

D. $\dfrac{a}{b+c}$

Answer: B

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219. In $\triangle ABC$, if $a \sin A = b \sin B$, then

A. $a + b = c$

B. $a > b$

C. $a < b$

D. $a = b$

Answer: D

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220. In any ΔABC, prove that

$a \sin A - \sin B = \sin(A - B)$

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221. In $\triangle ABC$, if $\angle C = \frac{\pi}{2}$, then $\frac{a^2 - b^2}{a^2 + b^2} =$

A. $-2\sin(A-B)$

B. $2\sin(A-B)$

C. $-\sin(A-B)$

D. $\sin(A-B)$

Answer: D

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222. In $\triangle ABC$, if $\angle C = \frac{\pi}{2}$, then $c - c\sin A \tan\left(\frac{A}{2}\right) =$

A. a

B. b

C. c

D. $a+b$

Answer: B

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223. For any triangle ABC, If $B = 3C$, show that $\cos C = \sqrt{\frac{b+c}{4c}}$ and $\frac{\sin A}{2} = \frac{b-c}{2c}$

A. $\sin C$

B. $\cos C$

C. $\cot C$

D. $\tan C$

Answer: B

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224. In any triangle ABC, prove that following: $\frac{\cos^2 B - \cos^2 C}{b+c} + \frac{\cos^2 C - \cos^2 A}{c+a} + \frac{\cos^2 A - \cos^2 B}{a+b} = 0$

A. $\frac{\cos^2 B - \cos^2 A}{a+b}$

B. $\frac{\cos^2 A - \cos^2 B}{a+b}$

C. $\frac{\cos^2 B - \cos^2 A}{b-a}$

D. $\frac{\cos^2 A - \cos^2 B}{a-b}$

Answer: A

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225. In $\triangle ABC, \sin\left(\frac{B-C}{2}\right) =$

A. $2\left(\frac{b-c}{a}\right)\cos\left(\frac{A}{2}\right)$

B. $\left(\frac{b-c}{a}\right)\cos\left(\frac{A}{2}\right)$

C. $2\left(\frac{c-b}{a}\right)\cos\left(\frac{A}{2}\right)$

D. $\left(\frac{c-b}{a}\right)\cos\left(\frac{A}{2}\right)$

Answer: B

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226. In $\triangle ABC, \cos\left(\frac{A-B}{2}\right) =$

A. $\left(\frac{a+b}{c}\right)\sin\left(\frac{C}{2}\right)$

B. $\left(\frac{a+b}{2c}\right)\sin\left(\frac{C}{2}\right)$

C. $\left(\frac{a+b}{c}\right)\cos\left(\frac{C}{2}\right)$

D. $\left(\frac{a+b}{2c}\right)\cos\left(\frac{C}{2}\right)$

Answer: A

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227. In $\triangle ABC, a\left(\cos B + \sin B \cot\left(\frac{A}{2}\right)\right) =$

A. $a+b+c$

B. $c+a$

C. $a+b$

D. $b+c$

Answer: D

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228. In $\triangle ABC, \frac{a-b}{a+b} =$

A. $\cot\left(\frac{A-B}{2}\right)\cot\left(\frac{A+B}{2}\right)$

B. $\tan\left(\frac{A-B}{2}\right)\cot\left(\frac{A+B}{2}\right)$

C. $\cot\left(\frac{A-B}{2}\right)\tan\left(\frac{A+B}{2}\right)$

D. $\tan\left(\frac{A-B}{2}\right)\tan\left(\frac{A+B}{2}\right)$

Answer: B

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229. In $\triangle ABC$, if $a=2, b=1, c=\sqrt{3}$, then $\angle A =$

A. 90°

B. 60°

C. 30°

D. 45°

Answer: A

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230. In $\triangle ABC$, if $a = 2, b = 1, c = \sqrt{3}$, then $\angle B =$

A. 90°

B. 60°

C. 30°

D. 45°

Answer: C

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

A. 90°

B. 60°

C. 30°

D. 45°

Answer: B

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232. In $\triangle ABC$, if $a^2 + c^2 - b^2 = ac$, then $\angle B =$

A. 30°

B. 45°

C. 60°

D. 90°

Answer: C

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233. In $\triangle ABC$, if $a = 3, b = 4, c = 5,$ then $\sin 2B =$

A. $\frac{3}{5}$

B. $\frac{4}{5}$

C. $\frac{24}{25}$

D. $\frac{12}{25}$

Answer: C

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234. In $\triangle ABC$, If b=20, c=21 and sinA=(3)/(5)`, then a=

A. 13

B. 14

C. 15

D. 16

Answer: A

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235. If $a = 9, b = 8$ and $c = x$ satisfies $3\cos C = 2,$ then

A. 4

B. 5

C. 6

D. 7

Answer: D

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236. A triangle side are few $7cm, 4\sqrt{3}cm$ and $\sqrt{13}cm$ then the smallest angle is

A. 30°

B. 45°

C. 60°

D. 90°

Answer: A

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237. If the lengths of the sides of a triangle are $3, 5, 7$, then its largest angle of the triangle is

A. 90°

B. 150°

C. 120°

D. 135°

Answer: C

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238. If in ΔABC, $\frac{2\cos A}{a} + \frac{\cos B}{b} + \frac{2\cos C}{c} = \frac{a}{bc} + \frac{b}{ca}$, then $\angle A$ is equal to

A. 30°

B. 45°

C. 60°

D. 90°

Answer: D

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239. In $\triangle ABC$, If $\frac{b+c}{11} = \frac{c+a}{12} = \frac{a+b}{13}$, then $\cos C =$

A. $\frac{5}{7}$

B. $\frac{7}{5}$

C. $\frac{16}{17}$

D. $\frac{17}{16}$

Answer: A

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240. In $\triangle ABC$, If $\frac{1}{b+c} + \frac{1}{c+a} = \frac{3}{a+b+c}$, then $\cos C =$

A. $\frac{1}{2}$

B. $\frac{-1}{2}$

C. $\frac{\sqrt{3}}{2}$

D. $\frac{1}{\sqrt{2}}$

Answer: A

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241. In any ΔABC, prove that

$a(b\cos C - c\cos B) = (b^2 - c^2)$

A. $c^2 - b^2$

B. $b^2 - c^2$

C. $2(c^2 - b^2)$

D. $2(b^2 - c^2)$

Answer: B

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242. In $\triangle ABC, (a-b)^2\cos^2\left(\frac{C}{2}\right) + (a+b)^2\sin^2\left(\frac{C}{2}\right)$

A. b^2

B. c^2

C. a^2

D. $a^2 + b^2 + c^2$

Answer: B

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243. In $\triangle ABC, (b-c)^2 \cos^2\left(\frac{A}{2}\right) + (b+c)^2 \sin^2\left(\frac{A}{2}\right)$

A. b^2

B. c^2

C. a^2

D. $a^2 + b^2 + c^2$

Answer: C

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244. In $\triangle ABC, 2(bc\cos A + ac\cos B + ab\cos C) =$

A. $a + b + c$

B. $2(a + b + c)$

C. $a^2 + b^2 + c^2$

D. $2\left(a^2 + b^2 + c^2\right)$

Answer: C

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245. In $\triangle ABC, 2(bc\cos A - ac\cos B - ab\cos C) =$

A. 0

B. $(a + b + c)$

C. $-3a^2 + b^2 + c^2$

D. $2\left(a^2+b^2+c^2\right)$

Answer: C

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246. In $\triangle ABC, a\cos B - b\cos A =$

A. $\left(a^2-b^2\right)$

B. b^2-c^2

C. c^2-a^2

D. $a^2+b^2+c^2$

Answer: A

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247. In a triangle ABC, the side a,b,c are such that they are the roots of then $\frac{\cos A}{a} + \frac{\cos B}{b} + \frac{\cos C}{c} =$

A. $\frac{a^2 + b^2 - c^2}{4}$

B. $\frac{a^2 + b^2 - c^2}{2}$

C. $\frac{a^2 + b^2 + c^2}{2abc}$

D. $\frac{a^2 + b^2 + c^2}{abc}$

Answer: C

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248. In $\triangle ABC, \left(b^2 + c^2 - a^2\right)\tan A =$

A. $2abc$

B. abc

C. $2bc\sin A$

D. $bc\sin A$

Answer: C

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249. In $\triangle ABC, \left(c^2+a^2-b^2\right)\tan B =$

A. $2ca\sin B$

B. $ca\sin B$

C. $2abc$

D. abc

Answer: A

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250. In $\triangle ABC, \left(b^2+a^2-c^2\right)\tan C =$

A. $ab\sin C$

B. $2ab\sin C$

C. abc

D. $2abc$

Answer: B

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251. In a $\triangle ABC$, $2ac.\sin\left(\frac{A-B+C}{2}\right) =$

A. $a^2+b^2-c^2$

B. $c^2+a^2-b^2$

C. $b^2-c^2-a^2$

D. $c^2-a^2-b^2$

Answer: B

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252. If in ΔABC, $2b^2 = a^2 + c^2$, then $\frac{\sin 3B}{\sin B}$ is equal to

A. $\frac{c^2 - a^2}{ca}$

B. $\frac{c^2 - a^2}{2ca}$

C. $\left(\frac{c^2 - a^2}{ca}\right)^2$

D. $\left(\frac{c^2 - a^2}{2ca}\right)^2$

Answer: D

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253. In $\triangle ABC$, if $a\cos A = b\cos B$, then the triangle is

A. an equilateral

B. a scalene

C. an right angled or an equilateral

D. an right angled isosceles

Answer: D

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254.

In a ΔABC, if $\frac{\cos A}{a} = \frac{\cos B}{b}$, show that the triangle is isosceles.

A. an equilateral

B. an isosceles

C. a right angled

D. a scalene

Answer: B

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255. In ΔABC, with usual notations, if $\cos A = \dfrac{\sin B}{\sin C}$, then the triangle is

A. a scalene

B. a right angled

C. an isosceles

D. an equilateral

Answer: b

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256. In any ABC , prove that: $2\left\{a\dfrac{\sin^2 C}{2} + c\dfrac{\sin^2 A}{2}\right\} = a + c - b$

A. $a + b + c$

B. $b + c - a$

C. $a + c - b$

D. $a+b-c$

Answer: C

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257. In $\triangle ABC, (b+c)\cos A+(c+a)\cos B+(a+b)\cos C=$

A. $a+b+c$

B. $2(a+b+c)$

C. $\frac{a+b+c}{2}$

D. $\frac{a+b+c}{4}$

Answer: A

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258. In

$\triangle ABC, a\left(b^2+c^2\right)\cos A+b\left(c^2+a^2\right)\cos B+c\left(a^2+b^2\right)\cos C=$

A. 0

B. $3abc$

C. $3a^2bc$

D. $3ab^2c$

Answer: B

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259. In a ΔABC,

$a\left(\cos^2 B+\cos^2 C\right)+\cos A(\text{os}C+b\cos B)=$

A. $a+b+c$

B. c

C. b

D. a

Answer: D

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260. IN $\triangle ABC$, $\frac{\cos C + \cos A}{c + a} + \frac{\cos B}{b} =$

A. $\frac{1}{a}$

B. $\frac{1}{b}$

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

D. $\frac{a + b}{b}$

Answer: B

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261. In $\triangle ABC$, $2(b - c)\cos^2\left(\frac{A}{2}\right) =$

A. $b(\cos A - \cos C)$

B. $a(\cos B - \cos C)$

C. $b(\cos C - \cos A)$

D. $a(\cos C - \cos B)$

Answer: D

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262. In any ΔABC, prove that

$$\frac{c - b\cos A}{b - c\cos A} = \frac{\cos B}{\cos C}$$

A. $\frac{\cos C}{\cos B}$

B. $-\frac{\cos C}{\cos B}$

C. $\frac{-\cos B}{\cos C}$

D. $\frac{\cos B}{\cos C}$

Answer: D

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263. $\angle A = \frac{\pi}{6}$ and $b : c = 2 : \sqrt{3}$, $find \angle B$

A. 90°

B. 60°

C. 45°

D. 30°

Answer: A

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264. In ΔABC, $\frac{\sin(A-B)}{\sin(A+B)} =$

A. $\frac{a^2 - b^2}{2c^2}$

B. $\frac{b^2 - c^2}{2a^2}$

C. $\frac{a^2 - b^2}{c^2}$

D. $\frac{b^2 - a^2}{c^2}$

Answer: C

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265. In $\triangle ABC, a^2 \sin(B - C) =$

A. $\left(b^2 - c^2\right)\sin A$

B. $\left(c^2 - b^2\right)\sin A$

C. $\left(2b^2 - c^2\right)\sin A$

D. $2\left(c^2 - b^2\right)\sin A$

Answer: A

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266. In any triangle ABC, prove that:

$$a^3 \sin(B-C) + b^3 \sin(C-A) + c^3 \sin(A-B) = 0$$

A. $a^2b^2 + b^2c^2 + a^2c^2$

B. $a + b + c$

C. $a^2 + b^2 + c^2$

D. 0

Answer: D

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267. In any ΔABC, find the value of

$$\frac{a^2 \sin(B-C)}{\sin B + \sin C} + \frac{b^2 \sin(C-A)}{\sin C + \sin A} + \frac{c^2 \sin(A-B)}{\sin A + \sin B}$$

A. $ab - ac$

B. 0

C. $bc - ab$

D. $ac - bc$

Answer: B

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268. In any ΔABC, find the value of $\frac{a^2 \sin(B-C)}{\sin B + \sin C} + \frac{b^2 \sin(C-A)}{\sin C + \sin A} + \frac{c^2 \sin(A-B)}{\sin A + \sin B}$

A. 0

B. $a^2 - b^2$

C. $b^2 - c^2$

D. $c^2 - a^2$

Answer: A

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269. In $\triangle ABC$, $\frac{a\sin(B-C)}{b^2-c^2} =$

A. $\sin A$

B. $-\sin A$

C. $a\sin A$

D. constant

Answer: D

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270. In $\triangle ABC$, $\frac{b\sin(C-A)}{c^2-a^2} =$

A. $\sin B$

B. $-\sin B$

C. $b\sin B$

D. constant

Answer: D

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271. In $\triangle ABC$, $\frac{c\sin(A-B)}{a^2-b^2} =$

A. $\sin C$

B. $-\sin C$

C. $c\sin C$

D. constant

Answer: D

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272. In ΔABC if the angle A, B, C are in A.P. then $\frac{a+c}{\sqrt{a^2-ac+c^2}} =$

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

B. $\sin\left(\frac{A+C}{2}\right)$

C. $\frac{\sin(A)}{2}$

D. $\sin\left(\frac{C}{2}\right)$

Answer: A

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273. In a ΔABC, if A,B,C are in AP, then $\frac{a}{c}\sin 2C + \frac{c}{a}(\sin 2A)$ is equal to

A. 1

B. $\sqrt{3}$

C. $\frac{1}{2}$

D. $\left(\frac{\sqrt{3}}{2}\right)$

Answer: B

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274. If a^2, b^2 and c^2 are in AP, then cotA, cotB and cotC are in

A. A.P

B. G.P

C. H.P.

D. A.G.P.

Answer: A

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275. In $\triangle ABC, \frac{\cos A}{c\cos B + b\cos C} + \frac{\cos B}{a\cos C + osA} + \frac{\cos C}{a\cos B + b\cos A} =$

A. $\frac{a^2 + b^2 - c^2}{4}$

B. $\frac{a^2 + b^2 - c^2}{2}$

C. $\frac{a^2+b^2+c^2}{4abc}$

D. $\frac{a^2+b^2+c^2}{2abc}$

Answer: D

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276. In a ΔABC, cosecA(sinBcosC+cosBsinC)` is equal to

A. 1

B. $\frac{a}{c}$

C. $\frac{c}{a}$

D. $\frac{c}{ab}$

Answer: A

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277. In $\triangle ABC$, if $a = 2, B = 120^\circ, C = 30^\circ$, then the area of triangle is

A. 1 sq. units

B. $\sqrt{3}$ sqt. Units

C. $2\sqrt{3}$ sq. units

D. $\left(\frac{\sqrt{3}}{2}\right)$ sq. units

Answer: B

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278. If in $\Delta ABC, \frac{\cos A}{a} = \frac{\cos B}{b} = \frac{\cos C}{c}$ and side a=2, then the area of the triangle is

A. 1 sq. units

B. 2 sq. units

C. $\sqrt{3}$ sqt. Units

D. $2\sqrt{3}$ sq. units

Answer: C

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279. In $\triangle ABC$, if $a = 13, b = 14, c = 15$, then cosB=

A. $\frac{198}{390}$

B. $\frac{394}{390}$

C. $\frac{196}{390}$

D. $\frac{500}{390}$

Answer: A

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280. In $\triangle ABC$, if $a = 13, b = 14$ and $c = 15$, then $\sin. \frac{A}{2} =$

.....

A. $\frac{1}{5}$

B. $\sqrt{\frac{1}{5}}$

C. $\frac{4}{5}$

D. $\frac{2}{5}$

Answer: B

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281. In $\triangle ABC$, if $a = 13, b = 14, c = 15$, then $\cos\left(\frac{A}{2}\right) =$

A. $\frac{1}{\sqrt{5}}$

B. $\frac{2}{\sqrt{5}}$

C. $\frac{\sqrt{5}}{2}$

D. $\frac{\sqrt{5}}{4}$

Answer: B

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282. In $\triangle ABC$, if $a = 13, b = 14, c = 15$, then $\tan\left(\frac{A}{2}\right) =$

A. 4

B. 2

C. $\frac{1}{4}$

D. $\frac{1}{2}$

Answer: D

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283. In $\triangle ABC$, if $a = 13, b = 14, c = 15$, then $A(\triangle ABC) =$

A. 7 sq. units

B. 3 sq. units

C. 84 sq. units

D. 28 sq. units

Answer: C

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284. In $\triangle ABC$, if $a = 13, b = 14, c = 15$, then $\sin A =$

A. $\frac{2}{5}$

B. $\frac{4}{5}$

C. $\frac{1}{5}$

D. $\frac{3}{5}$

Answer: B

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285. In any triangle ABC, if $a = \ 18, b = \ 24, c = \ 30$, find cosA, cosB, cosC

A. $\frac{1}{5}$

B. $\frac{2}{5}$

C. $\frac{3}{5}$

D. $\frac{4}{5}$

Answer: D

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286. If in $\triangle ABC$, with usual notations , $a = 18, b = 24, c = 30$, then $\sin. \frac{A}{2}$ is equal to

A. $\frac{1}{\sqrt{5}}$

B. $\frac{1}{\sqrt{10}}$

C. $\frac{1}{\sqrt{15}}$

D. $\frac{1}{2\sqrt{5}}$

Answer: B

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287. In $\triangle ABC$, if $a = 18, b = 24, c = 30$, then $\cos\left(\frac{A}{2}\right) =$

A. $\frac{4}{\sqrt{10}}$

B. $\frac{3}{\sqrt{10}}$

C. $\frac{2}{\sqrt{10}}$

D. $\frac{1}{\sqrt{10}}$

Answer: B

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288. In $\triangle ABC$, if $a = 18, b = 24, c = 30$, then $\tan\left(\frac{A}{2}\right) =$

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

B. $\frac{2}{3}$

C. $\frac{4}{3}$

D. 1

Answer: A

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289. In $\triangle ABC$, if $a = 18, b = 24, c = 30$, then $A(\triangle ABC)$

A. 216 sq. units

B. 54 sq. units

C. 108 sq. units

D. 192 sq. units

Answer: A

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290. In any triangle ABC, if $a = 18, b = 24, c = 30$, findsinA, sinB, sinC

A. $\frac{1}{5}$

B. $\frac{2}{5}$

C. $\frac{3}{5}$

D. $\frac{4}{5}$

Answer: C

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291. In $\triangle ABC$, if $a = 18, b = 24, c = 30$, then $\tan A =$

A. 1

B. $\frac{3}{4}$

C. $\frac{2}{4}$

D. $\frac{1}{4}$

Answer: B

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292. In $\triangle ABC, (b+c-a)\tan\left(\frac{A}{2}\right) =$

A. $\frac{A(\triangle ABC)}{s}$

B. $\frac{2A(\triangle ABC)}{s}$

C. $A(\triangle ABC)$

D. $2A(\triangle ABC)$

Answer: B

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293. In $\triangle ABC, (c+a-b)\tan\left(\frac{B}{2}\right) =$

A. $\frac{A(\triangle ABC)}{s}$

B. $\frac{2A(\triangle ABC)}{s}$

C. $A(\triangle ABC)$

D. $2A(\triangle ABC)$

Answer: B

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294. In $\triangle ABC, (a+b-c)\tan\left(\frac{C}{2}\right) =$

A. $\frac{A(\triangle ABC)}{s}$

B. $\frac{2A(\triangle ABC)}{s}$

C. $A(\triangle ABC)$

D. $2A(\triangle ABC)$

Answer: B

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295. In $\triangle ABC, s(s-a)\tan\left(\frac{A}{2}\right) =$

A. $\frac{A(\triangle ABC)}{2}$

B. $\frac{2A(\triangle ABC)}{4}$

C. $A(\triangle ABC)$

D. $2A(\triangle ABC)$

Answer: C

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296. In $\triangle ABC, s(s-b)\tan\left(\frac{B}{2}\right) =$

A. $\frac{A(\triangle ABC)}{2}$

B. $\frac{2A(\triangle ABC)}{4}$

C. $A(\triangle ABC)$

D. $2A(\triangle ABC)$

Answer: C

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297. In $\triangle ABC$, $s(s-c)\tan\left(\frac{C}{2}\right) =$

A. $\frac{A(\triangle ABC)}{2}$

B. $\frac{2A(\triangle ABC)}{4}$

C. $A(\triangle ABC)$

D. $2A(\triangle ABC)$

Answer: C

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298. In ΔABC if $2s = a + b + c$ and $(s - b)(s - c) = x \sin^2 \frac{A}{2}$,then the value of x is

A. ab

B. bc

C. ac

D. abc

Answer: B

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299. In ΔABC, if 2s=a+b+c , then the value of $\frac{s(s-a)}{bc} - \frac{(s-b)(s-c)}{bc}$ is

A. $\sin A$

B. $\cos A$

C. $\tan A$

D. $\cot A$

Answer: B

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300. In $\triangle ABC, \tan\left(\frac{A}{2}\right)\tan\left(\frac{B}{2}\right) =$

A. $\frac{c-(a+b)}{2(a+b+c)}$

B. $\frac{c-(a+b)}{a+b+c}$

C. $\frac{a+b-c}{2(a+b+c)}$

D. $\frac{a+b-c}{a+b+c}$

Answer: D

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301. $In\Delta ABC, 1 - \tan\left(\frac{A}{2}\right)\tan\left(\frac{B}{2}\right) =$

A. $\frac{1}{a+b+c}$

B. $\frac{2}{a+b+c}$

C. $\frac{c}{a+b+c}$

D. $\frac{2c}{a+b+c}$

Answer: D

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302. If k be the perimeter of the triangle ABC , then $b\cos^2\left(\frac{C}{2}\right)$ + c $\cos^2\left(\frac{B}{2}\right)$ is equal to

A. $2s$

B. s

C. 0

D. $a+b-c$

Answer: B

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303. In ΔABC, if a, b, c are in A.P. then $\frac{2\sin\left(\frac{A}{2}\right)\sin\left(\frac{C}{2}\right)}{\sin\left(\frac{B}{2}\right)} =$

A. 1

B. $\frac{-1}{2}$

C. $\frac{3}{2}$

D. $\frac{1}{2}$

Answer: a

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304. In $\triangle ABC, \sin\left(\frac{A}{2}\right)\sin\left(\frac{B}{2}\right)\sin\left(\frac{C}{2}\right) =$

A. $\frac{A(\triangle ABC)}{abc}$

B. $\frac{A(\triangle ABC)}{abcs}$

C. $\frac{A(\triangle ABC)^2}{abc}$

D. $\frac{A(\triangle ABC)^2}{abcs}$

Answer: D

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305. In any $\triangle ABC$ $\frac{\cot A}{2}, \frac{\cot B}{2}, \frac{\cot c}{2}$ are in A.P. then

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

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

C. $\left(\frac{a+b+c}{b+c-a}\right)\tan\left(\frac{A}{2}\right)$

D. $\left(\frac{b+c-a}{a+b+c}\right)\tan\left(\frac{A}{2}\right)$

Answer: A

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306. In $\triangle ABC$, $\dfrac{\tan\left(\frac{B}{2}\right)-\tan\left(\frac{C}{2}\right)}{\tan\left(\frac{B}{2}\right)+\tan\left(\frac{C}{2}\right)}=$

A. $\dfrac{b-c}{2a}$

B. $\dfrac{c-d}{2a}$

C. $\dfrac{b-c}{a}$

D. $\dfrac{c-b}{a}$

Answer: C

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307. In ABC, $\left(\dfrac{\cot A}{2}+\dfrac{\cot B}{2}\right)\left(a\dfrac{\sin^2 B}{2}+b\dfrac{\sin^2 A}{2}\right)=$ $\cot C$ (b) $\cot C$ (c) $\dfrac{\cot C}{2}$ (d) $\cot\dfrac{C}{2}$

A. $\cot\left(\frac{C}{2}\right)$

B. $\mathrm{o}t\left(\frac{C}{2}\right)$

C. $\cot C$

D. $\mathrm{o}tC$

Answer: B

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308. In any ΔABC, $\left(\frac{b-c}{a}\right)\cos^2\left(\frac{A}{2}\right)+\left(\frac{c-a}{b}\right)\cos^2\left(\frac{b}{2}\right)+\left(\frac{a-b}{2}\right)\cos^2\left(\frac{C}{2}\right)$ is equal

A. 0

B. $(s-a)(s-b)$

C. $(s-b)(s-c)$

D. $(s-c)(s-a)$

Answer: A

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309. If in a triangle ABC, $a\cos^2\left(\frac{C}{2}\right)os^2\left(\frac{A}{2}\right) = \frac{3b}{2}$, then the sides $a, b, andc$ are in A.P. b. are in G.P. c. are in H.P. d. satisfy $a + b = \cdot$

A. A.P

B. G.P

C. H.P.

D. A.G.P.

Answer: A

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310. If the cotangents of half the angles of a triangle are in A.P., then prove that the sides are in A.P.

A. H.P

B. G.P

C. A.P

D. A.G.P

Answer: C

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311. The principal value of $\sin^{-1}\left(\frac{1}{2}\right)$ is

A. $\frac{\pi}{6}$

B. $\frac{-\pi}{6}$

C. $\frac{\pi}{3}$

D. $\frac{2\pi}{3}$

Answer: A

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312. Find the principal value of $\sin^{-1}\left(\frac{1}{\sqrt{2}}\right)$

A. $\frac{-\pi}{4}$

B. $\frac{3\pi}{4}$

C. $\frac{\pi}{4}$

D. $\frac{-5\pi}{4}$

Answer: C

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313. The principal solution of $\sin x = \frac{-1}{2}$ is

A. $\frac{\pi}{6}$

B. $\frac{-\pi}{6}$

C. $\frac{5\pi}{6}$

D. $\frac{7\pi}{6}$

Answer: B

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314. The principal solution of $\sin x = -\frac{\sqrt{3}}{2}$ is

A. $\frac{4\pi}{3}$

B. $\frac{-\pi}{3}$

C. $\frac{\pi}{3}$

D. $\frac{-2\pi}{3}$

Answer: B

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315. निम्नलिखित के मुख्य मानो को ज्ञात कीजिए :

$\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$

A. $\frac{-11\pi}{6}$

B. $\frac{11\pi}{6}$

C. $\frac{-\pi}{6}$

D. $\frac{\pi}{6}$

Answer: D

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316. Select and write the correct answer from the alternatives in each of the following :

The principal solution of $\cos^{-1}\left(-\frac{1}{2}\right)$ is :

A. $\frac{\pi}{3}$

B. $\frac{\pi}{6}$

C. $\frac{2\pi}{3}$

D. $\frac{3\pi}{2}$

Answer: C

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317. निम्नलिखित के मुख्य मानो को ज्ञात कीजिए :

$\tan^{-1}(-1)$

A. $\frac{3\pi}{4}$

B. $\frac{\pi}{4}$

C. $\frac{7\pi}{4}$

D. $\frac{-\pi}{4}$

Answer: D

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318. The principal value of $\tan^{-1}(-\sqrt{3})$ is

A. $\frac{-\pi}{3}$

B. $\frac{\pi}{3}$

C. $\frac{5\pi}{3}$

D. $\frac{2\pi}{3}$

Answer: A

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319. $\cot^{-1}\left(\frac{-1}{\sqrt{3}}\right)$ का मुख्य मान ज्ञात कीजिए।

A. $\frac{2\pi}{3}$

B. $\frac{-2\pi}{3}$

C. $\frac{5\pi}{3}$

D. $\frac{4\pi}{3}$

Answer: A

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320. Find the principal and general solution of $\cos ecx = 2$

A. $\frac{\pi}{3}$

B. $\frac{2\pi}{3}$

C. $\frac{\pi}{6}$

D. $\frac{5\pi}{6}$

Answer: C

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321. The value of $\sin^{-1}\left(\sin', \frac{3\pi}{5}\right)$ is ....

A. $\frac{2\pi}{5}$

B. $\frac{-2\pi}{5}$

C. $\frac{-3\pi}{5}$

D. $\frac{3\pi}{5}$

Answer: A

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322. Find the principal values of the following :

(i) $\sin^{-1}\left(\sin.\frac{5\pi}{3}\right)$ (ii) $\cos^{-1}\cos\left(\frac{4\pi}{3}\right)$ (iii) $\cos\left[\frac{\pi}{3}+\cos^{-1}\left(-\frac{1}{2}\right)\right]$

A. $\frac{4\pi}{3}$

B. $\frac{5\pi}{3}$

C. $\frac{-5\pi}{3}$

D. $\frac{-\pi}{3}$

Answer: D

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323. $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$ का मान बराबर है

A. $\frac{7\pi}{6}$

B. $\frac{5\pi}{6}$

C. $\frac{\pi}{6}$

D. $\frac{11\pi}{6}$

Answer: B

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324. The principal solution of $\cos^{-1}\left(\cos\left(\frac{9\pi}{4}\right)\right)$ is

A. $\frac{7\pi}{4}$

B. $\frac{-\pi}{4}$

C. $\frac{9\pi}{4}$

D. $\frac{\pi}{4}$

Answer: D

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325. निम्नलिखित के मान ज्ञात कीजिए :

$\tan^{-1}\left(\tan\frac{3\pi}{6}\right)$

A. $\frac{7\pi}{6}$

B. $\frac{\pi}{6}$

C. $\frac{-\pi}{6}$

D. $\frac{-5\pi}{6}$

Answer: B

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326. निम्नलिखित के मान ज्ञात कीजिए :

$\cos^{-1}\left(\cos\frac{3\pi}{6}\right)$

A. $\frac{-\pi}{6}$

B. $\frac{11\pi}{6}$

C. $\frac{\pi}{6}$

D. $\frac{13\pi}{6}$

Answer: C

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327. The value of $\cos^{-1}\left(\frac{\cos(5\pi)}{3}\right)+\sin^{-1}\left(\frac{\sin(5\pi)}{3}\right)$ is $\frac{\pi}{2}$ (b) $\frac{5\pi}{3}$ (c) $\frac{10\pi}{3}$ (d) 0

A. 0

B. $\frac{\pi}{2}$

C. $\frac{2\pi}{3}$

D. $\frac{10\pi}{3}$

Answer: A

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328. $\cos^{-1}\left(\frac{1}{2}\right) + 2\sin^{-1}\left(\frac{1}{2}\right)$.

A. $\frac{\pi}{6}$

B. $\frac{\pi}{3}$

C. $\frac{2\pi}{3}$

D. 0

Answer: C

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329. $\sin^{-1}\left(\frac{1}{\sqrt{2}}\right) - 3\sin^{-1}\left(\frac{\sqrt{3}}{2}\right) =$

A. $\frac{-\pi}{12}$

B. $\frac{5\pi}{4}$

C. $\frac{3\pi}{4}$

D. $\frac{-3\pi}{4}$

Answer: D

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330. $\cos ec^{-1}(-\sqrt{2}) + \cot^{-1}(\sqrt{3}) =$

A. $\frac{-\pi}{4}$

B. $\frac{5\pi}{12}$

C. $\frac{-\pi}{12}$

D. $\frac{\pi}{6}$

Answer: C

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331. $\tan^{-1}\sqrt{3} - \sec^{-1}(-2) = \frac{\pi}{3}$

A. $\frac{\pi}{3}$

B. $\frac{2\pi}{3}$

C. (π)

D. $\frac{-\pi}{3}$

Answer: D

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332. $\tan^{-1}(1) + \cos^{-1}\left(\frac{1}{2}\right) + \sin^{-1}\left(\frac{1}{2}\right) =$

A. $\frac{\pi}{4}$

B. $\frac{3\pi}{4}$

C. $\frac{\pi}{12}$

D. $\frac{2\pi}{3}$

Answer: B

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333. $\cos^{-1}\sqrt{1-x}+\sin^{-1}\sqrt{1-x}=$

A. $\frac{\pi}{4}$

B. 1

C. π

D. $\frac{\pi}{2}$

Answer: D

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334. $\cos^{-1}\left(\frac{3}{5}\right)+\cos^{-1}\left(\frac{4}{5}\right)=$

A. $\frac{3\pi}{2}$

B. $\frac{\pi}{2}$

C. $\frac{-\pi}{2}$

D. 0

Answer: B

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335. The value of $\sin^{-1}\left(\frac{2\sqrt{2}}{3}\right)+\sin^{-1}\left(\frac{1}{3}\right)$ is

A. $\frac{\pi}{2}$

B. $\frac{3\pi}{2}$

C. $\frac{9\pi}{4}$

D. $\frac{9\pi}{8}$

Answer: A

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336. The value of $\sin\left(\frac{\sin^{-1}1}{2}+\frac{\cos^{-1}1}{2}\right)=?$

A. 2

B. -2

C. 1

D. -1

Answer: C

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337. $\frac{\tan^{-1}\left(\sqrt{3}\right)-\sec^{-1}(-2)}{\cos ec^{-1}\left(-\sqrt{2}\right)+\cos^{-1}\left(-\frac{1}{2}\right)}=$

A. $\frac{4}{5}$

B. $\frac{-4}{5}$

C. $\frac{3}{5}$

D. 0

Answer: B

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338. Find the value of $\tan^{-1}\left(\frac{x}{y}\right) - \tan^{-1}\left(\frac{x-y}{x+y}\right)$

A. $\frac{\pi}{4}$

B. $\frac{\pi}{3}$

C. $\frac{\pi}{2}$

D. $\frac{\pi}{4}$ or $\frac{-3\pi}{4}$

Answer: A

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339. निम्नलिखित फलनों को सरलतम रूप में लिखिए :

$$\tan^{-1}\left(\frac{\cos x - \sin x}{\cos x + \sin x}\right), \frac{\pi}{4} < x < \frac{3\pi}{4}$$

A. $-x$

B. x

C. $\frac{\pi}{4} - x$

D. $\frac{\pi}{4} + x$

Answer: C

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340. Show that $\tan^{-1}\left[\frac{\cos x + \sin x}{\cos x - \sin x}\right] = \frac{\pi}{4} + x.$

A. $-x$

B. x

C. $\frac{\pi}{4} - x$

D. $\frac{\pi}{4} + x$

Answer: D

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341. $\tan^{-1}\left[\frac{a\cos x - b\sin x}{b\cos x + a\sin x}\right]$ को सरल कीजिए, यदि $\frac{a}{b}\tan x \leq -1$

A. $\tan^{-1}\left(\frac{b}{a}\right) + x$

B. $\tan^{-1}\left(\frac{b}{a}\right) - x$

C. $\tan^{-1}\left(\frac{a}{b}\right) + x$

D. $\tan^{-1}\left(\frac{a}{b}\right) - x$

Answer: A

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342. Differentiate w.r.t. x:

$(i)\tan^{-1}\left\{\sqrt{\frac{1+\cos x}{1-\cos x}}\right\}$ $(ii)\tan^{-1}\left\{\sqrt{\frac{1+\sin x}{1-\sin x}}\right\}$

A. $\frac{x}{2}$

B. $\frac{-x}{2}$

C. $\frac{\pi}{2}+\frac{x}{2}$

D. $\frac{\pi}{2}-\frac{x}{2}$

Answer: A

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343. If $\tan^{-1} y = \tan^{-1} x + \tan^{-1}\left(\frac{2x}{1-x^2}\right)$, where $|x| < \frac{1}{\sqrt{3}}$.

Then, the value of y is

A. $\frac{3x-x^2}{1+3x^2}$

B. $\frac{3x+x^2}{1+3x^2}$

C. $\frac{3x - x^2}{1 - 3x^2}$

D. $\frac{3x + x^2}{1 - 3x^2}$

Answer: C

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344. If $\tan^{-1} x - \tan^{-1} y = \tan^{-1} A,$ then A=

A. $\frac{x - y}{1 + xy}$

B. $\frac{x + y}{1 - xy}$

C. $x - y$

D. $x + y$

Answer: A

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345. If x takes negative permissible vlaue then $\sin^{-1} x =$

A. $\cos^{-1}\left(\sqrt{1-x^2}\right)$

B. $-\cos^{-1}\left(\sqrt{1-x^2}\right)$

C. $\pi - \cos^{-1}\left(\sqrt{1-x^2}\right)$

D. $\cos^{-1}\left(\sqrt{x^2-1}\right)$

Answer: B

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346. Differentiate each of the following functions with respect to x:

`sin^(-1)(2xsqrt(1-x^2)),-1/(sqrt(2))

A. $2\cos^{-1} x$

B. $\cos^{-1} x$

C. $2\sin^{-1} x$

D. $\sin^{-1} x$

Answer: C

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347. If $x \in [0, 1]$, then $\frac{1}{2}\cos^{-1}\left(\frac{1-x}{1+x}\right) =$

A. $\tan^{-1} x$

B. $\tan^{-1}(\sqrt{x})$

C. $\frac{1}{2}\tan^{-1} x$

D. $\frac{1}{2}\tan^{-1}(\sqrt{x})$

Answer: B

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348. Prove that : $\frac{\tan 1}{2}\left\{\frac{\sin^{-1}(2x)}{1+x^2}+\frac{\cos^{-1}(1-y^2)}{1+y^2}\right\}=\frac{x+y}{1-xy}$, if $|x|<1,\ y>0$ and $xy<1$.

A. $\frac{x-y}{1+xy}$

B. $\frac{y-x}{1+xy}$

C. $\frac{x+y}{1-xy}$

D. $\frac{x+y}{xy-1}$

Answer: C

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349. Solve $y=\tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right)$

A. $\frac{x}{2}$

B. $\frac{1}{2}\tan^{-1}x$

C. $\tan^{-1}x$

D. $2\tan^{-1}x$

Answer: B

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350. $\tan^{-1}\left(\frac{\sqrt{1+x}+\sqrt{1-x}}{\sqrt{1+x}-\sqrt{1-x}}\right)$

A. $\frac{\pi}{2}-\cos^{-1}x$

B. $\frac{\pi}{2}+\cos^{-1}x$

C. $\frac{\pi}{4}-\frac{1}{2}\cos^{-1}x$

D. $\frac{\pi}{4}+\frac{1}{2}\cos^{-1}x$

Answer: C

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351. If $x \in (0, 1)$, then find the value of $\tan^{-1}\left(\frac{1-x^2}{2x}\right) + \cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)$

A. 0

B. π

C. $\frac{\pi}{4}$

D. $\frac{\pi}{2}$

Answer: D

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352. Simplify $\sin\left(\cot^{-1}\left(\cos\left(\tan^{-1} x\right)\right)\right), 0 < x < 1.$

A. $\frac{x}{\sqrt{x^2+1}}$

B. $\frac{x}{\sqrt{x^2+2}}$

C. $\frac{\sqrt{x^2+1}}{\sqrt{x^2+2}}$

D. $\frac{1}{\sqrt{x^2+2}}$

Answer: C

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353. If $x > y > z > 0$, then find the value of $\frac{\cot^{-1}(xy+1)}{x-y} + \frac{\cot^{-1}(yz+1)}{zy-z} + \frac{\cot^{-1}(zx+1)}{z-x}$

A. 0

B. 1

C. $\cot^{-1} x + \cot^{-1} y + \cot^{-1} z$

D. π

Answer: A

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354. If $\sin^{-1} x + \sin^{-1} y = \frac{2\pi}{3}$, then $\cos^{-1} x + \cos^{-1} y$

A. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{3}$

D. $\frac{\pi}{2}$

Answer: C

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355. If $\sin^{-1}\left(\frac{x}{5}\right) + \cos ec^{-1}\left(\frac{5}{4}\right) = \frac{\pi}{2}$, then the value of x is

A. 1

B. 3

C. 4

D. 5

Answer: B

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356. If $\sin\left(\frac{\sin^{-1}1}{5}+\cos^{-1}x\right)$ =1 then x is equal to

A. $\frac{-1}{5}$

B. $\frac{1}{5}$

C. -5

D. 5

Answer: B

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357. If $4\sin^{-1}x+\cos^{-1}x=\pi$, then x is equal to

A. 0

B. $\frac{1}{2}$

C. $\frac{1}{\sqrt{2}}$

D. $\frac{\sqrt{3}}{2}$

Answer: B

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358. If $\sin^{-1}(x) + \sin^{-1}(2x) = \frac{\pi}{3}$ then $x =$

A. $\frac{\sqrt{3}}{2\sqrt{7}}$

B. $\frac{1}{2}$

C. $\frac{1}{\sqrt{2}}$

D. $\frac{\sqrt{3}}{2}$

Answer: A

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359. For $0 \leq |x| \leq \sqrt{2}$, if $\cos^{-1}\left(x^2 - \frac{x^4}{2} + \frac{x^6}{4} - \ldots\right) + \sin^{-1}\left(x - \frac{x^2}{2} + \frac{x^3}{4}\right) - \ldots\right) = \frac{\pi}{2}$, then x=

A. $\frac{-1}{2}$

B. $\frac{1}{2}$

C. -1

D. 1

Answer: D

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360. If $\cos\left(2\sin^{-1} x\right) = \frac{1}{9}$, then find the values of x.

A. $\frac{4}{9}$

B. $\pm\frac{2}{3}$

C. $\frac{2}{3}$

D. $\frac{-2}{3}$

Answer: B

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361. IF $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$, then x=

A. 1

B. -1

C. $\frac{1}{3}$

D. $\frac{1}{6}$

Answer: D

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362. If $\tan^{-1}(1+x)+\tan^{-1}(1-x)=\frac{\pi}{2}$ then $x=?$

A. -1

B. 0

C. 1

D. π

Answer: B

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363. If $\frac{\tan^{-1}(x-1)}{x-2}+\frac{\tan^{-1}(x+1)}{x+2}=\frac{\pi}{4}$, then find the value of x.

A. $\frac{1}{2}$

B. $\pm\frac{1}{2}$

C. $\pm\frac{1}{\sqrt{2}}$

D. $\pm\sqrt{2}$

Answer: C

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364. If $x \geq 0$ and $\tan^{-1}\left(\frac{1-x}{1+x}\right) = \frac{1}{2}\tan^{-1} x$, then x=

A. 3

B. 2

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

D. $\frac{1}{\sqrt{2}}$

Answer: C

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365. If $\tan^{-1}.\frac{\sqrt{(1+x^2)}-\sqrt{(1-x^2)}}{\sqrt{(1+x^2)}+\sqrt{(1-x^2)}} = \alpha$, then x^2 is

A. $\sin\phi$

B. $\cos\phi$

C. $\sin 2\phi$

D. $\cos 2\phi$

Answer: C

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366. If $2\tan^{-1}(\cos x) = \tan^{-1}(2\cos ecx)$, then x=

A. $\frac{\pi}{4}$

B. $\frac{-\pi}{4}$

C. $\frac{\pi}{3}$

D. $\frac{\pi}{6}$

Answer: A

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367. If $2\tan^{-1}(\cos x) = \tan^{-1}(2\cos ecx)$, then sinx +cosx is equal to

A. $2\sqrt{2}$

B. $\sqrt{2}$

C. $\frac{1}{\sqrt{2}}$

D. $\frac{1}{2}$

Answer: B

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368. If $\cos ec^{-1}x = 2\cot^{-1}7 + \cos^{-1}\left(\frac{3}{5}\right)$, then x=

A. $\frac{117}{44}$

B. $\frac{117}{22}$

C. $\frac{125}{117}$

D. $\frac{175}{117}$

Answer: C

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369. If $\sin^{-1}(1-x)\sin^{-1}x = \frac{\pi}{2}$ then x equal

A. $\frac{-1}{2}$

B. 1

C. 0

D. $\frac{1}{2}$

Answer: C

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370. If $\sin^{-1}(1-x) - 2\sin^{-1}x = \cos^{-1}x$, then x=

A. $0, \frac{1}{2}$

B. 1

C. 0

D. $\frac{1}{2}$

Answer: C

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371. If $\tan^{-1} x + \cos^{-1}\left(\frac{y}{\sqrt{1+y^2}}\right) = \sin^{-1}\left(\frac{3}{\sqrt{10}}\right)$, then

A. $x = 2, y = 1$

B. $x = 2, y = 3$

C. $x = 3, y = 2$

D. $x = 1, y = 2$

Answer: D

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372. Solve, $\left(\sec^{-1}\right)\frac{x}{a} - \left(\sec^{-1}\right)\frac{x}{b} = \sec^{-1} b - \sec^{-1} a.$

A. 1

B. pq

C. $\frac{p}{q}$

D. $\frac{q}{p}$

Answer: B

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373. $2\sin^{-1}\left(\frac{3}{5}\right) =$

A. $\tan^{-1}\left(\frac{4}{3}\right)$

B. $\tan^{-1}\left(\frac{7}{24}\right)$

C. $\tan^{-1}\left(\frac{3}{4}\right)$

D. $\tan^{-1}\left(\frac{24}{7}\right)$

Answer: D

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374. $2\tan^{-1}\left(\frac{1}{3}\right) =$

A. $-\tan^{-1}\left(\frac{4}{3}\right)$

B. $-\tan^{-1}\left(\frac{3}{4}\right)$

C. $\tan^{-1}\left(\frac{4}{3}\right)$

D. $\tan^{-1}\left(\frac{3}{4}\right)$

Answer: D

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375. Prove that: $2\frac{\tan^{-1}1}{2} + \frac{\tan^{-1}1}{7} = \frac{\tan^{-1}(31)}{17}$

A. $\tan^{-1}\left(\frac{31}{17}\right)$

B. $\tan^{-1}\left(\frac{25}{21}\right)$

C. $\tan^{-1}\left(\frac{17}{3}\right)$

D. $\tan^{-1}\left(\frac{21}{25}\right)$

Answer: A

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376. $2\tan^{-1}\left(\frac{1}{3}\right)+\tan^{-1}\left(\frac{1}{2}\right)=$

A. $\frac{\pi}{2}$

B. $\frac{\pi}{3}$

C. $\frac{\pi}{4}$

D. $\tan^{-1}2$

Answer: D

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377. Evaluate: $\tan\left\{2tan - 1\frac{1}{5} - \frac{\pi}{4}\right\}$

A. $\frac{-17}{7}$

B. $\frac{-7}{17}$

C. $\frac{17}{7}$

D. $\frac{7}{17}$

Answer: B

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378. $\tan^{-1}\left(\frac{1}{2}\right) + \tan^{-1}\left(\frac{2}{11}\right) =$

A. $\tan^{-1}\left(\frac{4}{3}\right)$

B. $\tan^{-1}\left(\frac{3}{4}\right)$

C. $\pi + \tan^{-1}\left(\frac{4}{3}\right)$

D. $\pi + \tan^{-1}\left(\frac{3}{4}\right)$

Answer: B

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379. $\tan^{-1}\left(\frac{1}{2}\right)+\tan^{-1}\left(\frac{1}{3}\right)=$

A. 0

B. $\frac{\pi}{6}$

C. $\frac{\pi}{4}$

D. $\frac{-\pi}{4}$

Answer: C

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380. $\cos\left(\tan^{-1}\left(\frac{1}{3}\right)+\tan^{-1}\left(\frac{1}{2}\right)\right)=$

A. $\frac{-1}{\sqrt{2}}$

B. $\frac{1}{\sqrt{2}}$

C. $\frac{1}{2}$

D. $\frac{-1}{2}$

Answer: B

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381. $\tan^{-1} 1 + \tan^{-1} 2 + \tan^{-1} 3 =$

A. 0

B. π

C. $\frac{\pi}{4}$

D. $\frac{\pi}{2}$

Answer: B

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382. $\tan^{-1}\left(\frac{3}{4}\right)+\tan^{-1}\left(\frac{3}{5}\right)-\tan^{-1}\left(\frac{8}{19}\right)=$

A. $\frac{\pi}{6}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{3}$

D. 0

Answer: B

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383. $\tan^{-1}\left(\frac{1}{5}\right)+\tan^{-1}\left(\frac{1}{7}\right)+\tan^{-1}\left(\frac{1}{3}\right)+\tan^{-1}\left(\frac{1}{8}\right)=$

A. $\frac{\pi}{2}$

B. $\frac{\pi}{3}$

C. $\frac{\pi}{6}$

D. $\frac{\pi}{4}$

Answer: D

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384. Prove that $\sin^{-1}\left(-\frac{1}{2}\right)+\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)=\cos^{-1}\left(-\frac{1}{2}\right)$.

A. $\cos^{-1}\left(\frac{-1}{2}\right)$

B. $\cos^{-1}\left(\frac{1}{2}\right)$

C. $\cos^{-1}\left(\frac{-\sqrt{3}}{2}\right)$

D. $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$

Answer: A

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385. $\cos^{-1}\left(\frac{12}{13}\right)+\sin^{-1}\left(\frac{3}{5}\right)=$

A. $\sin^{-1}\left(\frac{56}{65}\right)$

B. $\sin^{-1}\left(\frac{16}{65}\right)$

C. $\sin^{-1}\left(\frac{20}{65}\right)$

D. $\sin^{-1}\left(\frac{36}{65}\right)$

Answer: A

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386. $\sin^{-1}\left(\frac{8}{17}\right)+\sin^{-1}\left(\frac{3}{5}\right)=$

A. $-\sin^{-1}\left(\frac{77}{85}\right)$

B. $\sin^{-1}\left(\frac{4}{5}\right)$

C. $\sin^{-1}\left(\frac{77}{85}\right)$

D. $\tan^{-1}\left(\frac{77}{86}\right)$

Answer: C

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387. $\cos^{-1}\left(\frac{4}{5}\right)+\cos^{-1}\left(\frac{12}{13}\right)=$

A. $\cos^{-1}\left(\frac{48}{65}\right)$

B. $\cos^{-1}\left(\frac{33}{65}\right)$

C. $\cos^{-1}\left(\frac{11}{65}\right)$

D. $\pi-\cos^{-1}\left(\frac{8}{65}\right)$

Answer: B

Watch Video Solution

388. $\sin^{-1}\left(\frac{8}{17}\right)+\sin^{-1}\left(\frac{3}{5}\right)=$

A. $\tan^{-1}\left(\frac{77}{36}\right)$

B. $\tan^{-1}\left(\frac{77}{85}\right)$

C. $\pi+\tan^{-1}\left(\frac{77}{36}\right)$

D. $\pi - \tan^{-1}\left(\frac{77}{36}\right)$

Answer: A

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389. $\sin^{-1}\left(\frac{5}{13}\right) + \cos^{-1}\left(\frac{3}{5}\right) =$

A. $\tan^{-1}\left(\frac{5}{12}\right)$

B. $\tan^{-1}\left(\frac{63}{16}\right)$

C. $\tan^{-1}\left(\frac{4}{3}\right)$

D. $\tan^{-1}\left(\frac{9}{4}\right)$

Answer: B

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390. $\tan\left(\sin^{-1}\left(\frac{3}{5}\right) + \cos^{-1}\left(\frac{3}{\sqrt{13}}\right)\right) =$

A. $\frac{\sqrt{13}}{5}$

B. $\frac{5}{\sqrt{13}}$

C. $\frac{17}{6}$

D. $\frac{17}{9}$

Answer: C

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391. $\tan\left(\cos^{-1}\left(\frac{4}{5}\right)+\tan^{-1}\left(\frac{2}{3}\right)\right)=$

A. $\frac{17}{24}$

B. $\frac{24}{17}$

C. $\frac{17}{6}$

D. $\frac{6}{17}$

Answer: C

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392. $\tan^{-1}\left(\frac{5}{13}\right)+\cos^{-1}\left(\frac{3}{5}\right)=$

A. $\tan^{-1}\left(\frac{67}{19}\right)$

B. $\tan^{-1}\left(\frac{1}{59}\right)$

C. $\tan^{-1}\left(\frac{19}{67}\right)$

D. $\tan^{-1}(59)$

Answer: A

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393. Prove that: $\frac{\sin^{-1}(12)}{13}+\frac{\cos^{-1}4}{5}+\frac{\tan^{-1}(63)}{16}=\pi$

A. $\frac{\pi}{2}$

B. π

C. $\tan^{-1}\left(\frac{12}{5}\right)$

D. $\tan^{-1}\left(\frac{3}{4}\right)$

Answer: B

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394. $\tan\left(\tan^{-1}\left(\frac{1}{2}\right)-\tan^{-1}\left(\frac{1}{3}\right)\right)=$

A. $\frac{1}{6}$

B. $\frac{1}{7}$

C. $\frac{5}{6}$

D. $\frac{7}{6}$

Answer: B

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395. Find the value of expression: $\sin\left(2\frac{\tan^{-1}1}{3}\right)+\cos\left(\tan^{-1}2\sqrt{2}\right)$

A. $\frac{11}{15}$

B. $\frac{12}{15}$

C. $\frac{14}{15}$

D. $\frac{16}{15}$

Answer: C

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396. If $\sin\left(\cot^{-1}(x+1)\right) = \cos\tan^{-1}x$, then x=

A. 0

B. $\frac{9}{4}$

C. $\frac{1}{2}$

D. $\frac{-1}{2}$

Answer: D

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397. $\sin\left(\sin^{-1}\left(\frac{1}{3}\right)+\sec^{-1}(3)\right)+\cos\left(\tan^{-1}\left(\frac{1}{2}\right)+\tan^{-1}2\right)=$

A. 1

B. 2

C. 0

D. -1

Answer: A

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398. If $x=2.\ y=3$, then $\tan^{-1}x+\tan^{-1}y=$

A. $\frac{\pi}{4}$

B. $\frac{\pi}{3}$

C. $\frac{-\pi}{4}$

D. π

Answer: C

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399. If $\cos^{-1} x + \cos^{-1} y + \cos^{-1} z + \cos^{-1} t = 4\pi$, then $x^2 + y^2 + z^2 + t^2 =$

A. 6

B. 4

C. $xy + yz + zt$

D. $1 - 2xyzt$

Answer: B

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400. In $\triangle ABC$, if $\angle A = 90^\circ$, then $\tan^{-1}\left(\frac{c}{a+b}\right) + \tan^{-1}\left(\frac{b}{a+c}\right) =$

A. $\frac{\pi}{8}$

B. $\frac{\pi}{2}$

C. $\frac{\pi}{4}$

D. $\frac{\pi}{6}$

Answer: C

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401. The number of principal solution of $\tan 2\theta = 1$ is

A. one

B. two

C. three

D. four

Answer: D

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402. If α and β are the roots of the equation $x^2 + 5|x| - 6 = 0$, then the value of the $\left|\tan^{-1}\alpha - \tan^{-1}\beta\right|$ is

A. $\frac{\pi}{2}$

B. 0

C. π

D. $\frac{\pi}{4}$

Answer: A

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403. In ΔABC, if $\sin^2 A + \sin^2 B = \sin^2 C$ and $l(AB) = 10,$ then the maximum value of the area of ΔABC is

A. 50

B. $10\sqrt{2}$

C. 25

D. $25\sqrt{2}$

Answer: C

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404. The value of $\cos^{-1}\left(\cos\left(\frac{\pi}{2}\right)\right) + \cos^{-1}\left(\sin\left(\frac{2\pi}{3}\right)\right)$ is

A. $\frac{2\pi}{3}$

B. $\frac{\pi}{3}$

C. $\frac{\pi}{2}$

D. π

Answer: A