MATHS

BOOKS - TARGET MATHS (HINGLISH)

FACTORIZATION FORMULAE

Classical Thinking

1. $\cos 5^\circ - \sin 25^\circ$ is equal to

A. $\sin 20^\circ$

B. $\sin 60^\circ$

C. $\cos 55^\circ$

D. $\cos 90^\circ$

Answer: C

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2. The value of $\cos 57^\circ + \sin 27^\circ$ is equal to

A. $\cos 30^\circ$

B. $\cos 3^\circ$

C. $\sin 3^\circ$

D. $\sin 30^\circ$

Answer: B

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3. Prove that $\cos 18^\circ - \sin 18^\circ = \sqrt{2}\sin 27^\circ$

A. $\sin 27^\circ$

B. $\sqrt{2}\sin 27^\circ$

C. $\cos 27^\circ$

D. $\sqrt{2}\cos 27^\circ$

Answer: B

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4. $\cos\left(\frac{3\pi}{4}+x\right)-\cos\left(\frac{3\pi}{4}-x\right)=-\sqrt{2}\sin x$

A. $-\sqrt{2}\sin x$

B. $\sqrt{2}\sin x$

C. $\cos x$

D. $-\sqrt{2}\cos x$

Answer: A

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5. $\sin 50^\circ-\sin 70^\circ+\sin 10^\circ$

A. 1

B. 0

C. $\frac{1}{2}$

D. 2

Answer: B

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6. The value of $\cos 52^\circ + \cos 68^\circ + \cos 172^\circ$

A. 0

B. 1

C. 2

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

Answer: A

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7.

$\sin(\beta+\gamma-\alpha)+\sin(\gamma+\alpha-\beta)+\sin(\alpha+\beta-\gamma)-\sin(\alpha+\beta+\gamma)=$

A. $2\sin\alpha\sin\beta\sin\gamma$

B. $4\sin\alpha\sin\beta\sin\gamma$

C. $8\sin\alpha\sin\beta\sin\gamma$

D. $\sin\alpha\sin\beta\sin\gamma$

Answer: B

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8. Prove that $\frac{\sin 3x-\sin x}{\cos x-\cos 3x}=\cot 2x$

A. $\sin x$

B. $\cos x$

C. $2\sin x$

D. $2\cos x$

Answer: C

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9. $\frac{\sin 5x + \sin 3x}{\cos 5x + \cos 3x} = \tan 4x$

A. $\cot x$

B. $\cot 4x$

C. $tnax$

D. $\tan 4x$

Answer: D

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10. $\frac{\cos 7A + \cos 5A}{\sin 7A - \sin 5A} =$

A. $\cot A$

B. $\cot 5A$

C. $\tan A$

D. $\tan 5A$

Answer: A

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11. $\frac{\sin 70^\circ + \cos 40^\circ}{\cos 70^\circ + \sin 40^\circ} =$

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

B. $\sqrt{3}$

C. $\frac{1}{2}$

D. 1

Answer: B

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12. $\frac{\sin 3A - \cos\left(\frac{\pi}{2} - A\right)}{\cos A + \cos(\pi + 3A)} =$

A. $\tan A$

B. $\cot A$

C. $\tan 2A$

D. $\cot 2A$

Answer: D

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13. $\frac{\sin 3\theta + \sin 5\theta + \sin 7\theta + \sin 9\theta}{\cos 3\theta + \cos 5\theta + \cos 7\theta + \cos 9\theta} =$

A. $\tan 3\theta$

B. $\cot 3\theta$

C. $\tan 6\theta$

D. $\cot 6\theta$

Answer: C

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14. If $\frac{\sin(x+y)}{\sin(x-y)} = \frac{a+b}{a-b}$, then $\frac{\tan x}{\tan y}$ is equal to

A. $\frac{b}{a}$

B. $\frac{a}{b}$

C. ab

D. $a-b$

Answer: B

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15. The value of $2\sin 3x \cos 2x$ is equal to

A. $\sin 5x + \sin x$

B. $\sin 3x + \sin x$

C. $\sin 7x + \sin x$

D. $\sin 4x + \sin x$

Answer: A

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16. Prove that

$(i)\quad 2\sin\dfrac{5\pi}{12}\sin\dfrac{\pi}{12} = \dfrac{1}{2}$

$(ii)\quad 2\cos\dfrac{5\pi}{12}\cos\dfrac{\pi}{12} = \dfrac{1}{2}$

$(iii)\quad 2\sin\dfrac{5\pi}{12}\cos\dfrac{\pi}{2} = \left(\dfrac{2+\sqrt{3}}{2}\right)$

A. $\dfrac{2+\sqrt{3}}{2}$

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

C. $\frac{1}{2}$

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

Answer: A

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17. The value of $\cos 75^\circ \cos 15^\circ$ is equal to

A. $\frac{1}{2}$

B. $\frac{1}{\sqrt{2}}$

C. $\frac{1}{4}$

D. 1

Answer: C

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18. $\sin(45^\circ + A)\sin(45^\circ - A) = .$

A. $\cos A$

B. $\frac{1}{2}\cos 2A$

C. $\cos 2A$

D. $\frac{1}{2}\cos A$

Answer: B

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19. $4\sin\left(\frac{\pi}{3} + \theta\right)\sin\left(\frac{\pi}{3} - \theta\right) =$

A. $1 + \cos\theta$

B. $1 - 2\cos 2\theta$

C. $2\cos 2\theta - 1$

D. $1 + 2\cos 2\theta$

Answer: D

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20. $\sin 180^\circ \sin 70^\circ + \sin 16^\circ \sin 36^\circ =$

A. $\sin 54^\circ \sin 34^\circ$

B. $\sin 54^\circ \cos 34^\circ$

C. $\cos 54^\circ \sin 34^\circ$

D. $\cos 54^\circ \cos 34^\circ$

Answer: A

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21. The value of $\sin 10^\circ \sin 30^\circ \sin 50^\circ \sin 70^\circ$ is

A. $\frac{1}{8}$

B. $\frac{1}{16}$

C. $\frac{\sqrt{3}}{8}$

D. $\frac{\sqrt{3}}{16}$

Answer: B

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22. The value of $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ$ is equal to

A. $\frac{1}{16}$

B. $\frac{3}{16}$

C. $\frac{\sqrt{3}}{16}$

D. $\frac{\sqrt{3}}{32}$

Answer: A

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23. If $A + B + c = \pi$, then $\sin(A + B) =$

A. $\sin A$

B. $\sin B$

C. $\sin A + \sin C$

D. $\sin C$

Answer: D

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24. $A + B + C = 180^\circ \Rightarrow CosecA[\sin B \cos C + \cos B \sin c] =$

A. 1

B. 0

C. 2

D. -1

Answer: A

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25. If $\alpha + \beta + \gamma = \pi$, then the value of $\sin^2 \alpha + \sin^2 \beta - \sin^2 \gamma$ is equal to

A. $2 \sin \alpha$

B. $2 \sin \alpha \cos \beta \sin \gamma$

C. $2 \sin \alpha \sin \beta \cos \gamma$

D. $2 \sin \alpha \sin \beta \sin \gamma$

Answer: C

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26. If $A + B + C = \pi$, then

$\cos^2 A + \cos^2 B - \cos^2 C$ is equal to

A. $1 - 4\sin A\cos B\sin C$

B. $1 - 2\sin A\sin B\sin C$

C. $1 - 2\sin A\sin B\cos C$

D. $1 - 4\sin A\sin B\cos C$

Answer: C

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27. If $A + B + C = 180^\circ$, then $\tan A + \tan B + \tan C$ is equal to

A. $\tan A\tan B\tan C$

B. $2\tan A\tan B\tan C$

C. $-\tan A\tan B\tan C$

D. $1 - 4\tan A\tan B\tan C$

Answer: A

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28. If $A + B + C = \pi$, and $\cos A = \cos B . \cos C$, then $\cot B . \cot C =$

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

B. 1

C. 2

D. $\frac{1}{2}$

Answer: D

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Critical Thinking

1. Find the value of $\cos 12^\circ + \cos 84^\circ + \cos 156^\circ + \cos 132^\circ$

A. $\frac{1}{2}$

B. 1

C. $-\frac{1}{2}$

D. $\frac{1}{8}$

Answer: C

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2. The value of $\cot 70^\circ + 4\cos 70^\circ$ is

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

B. $\sqrt{3}$

C. $2\sqrt{3}$

D. $\frac{1}{2}$

Answer: B

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3. $\cos 10x + \cos 8x + 3\cos 4x + 3\cos 2x =$

A. $8\cos x \cos 3x$

B. $8\cos^3 x + \cos 3x$

C. $8\cos^3 x \cos^3 x$

D. $8\cos x \cos^3 3x$

Answer: D

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4. $1 + \cos 2x + \cos 4x + \cos 6x =$

A. $2\cos x \cos 2x \cos 3x$

B. $4\sin x \cos 2x \cos 3x$

C. $4\cos x \cos 2x \cos 3x$

D. $2\sin x \cos 2x \cos 3x$

Answer: C

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5. The expression

$$\frac{\cos 6x + 6\cos 4x + 15\cos 2x + 10}{\cos 5x + 5\cos 3x + 10\cos x}$$

A. $\cos 2x$

B. $2\cos x$

C. $\cos^2 x$

D. $1 + \cos x$

Answer: C

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6. If $\sin\theta + \sin 2\theta + \sin 3\theta = \sin\alpha$ and $\cos\theta + \cos 2\theta + \cos 3\theta = \cos\alpha$, then θ is equal to

A. $\frac{\alpha}{2}$

B. α

C. 2α

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

Answer: C

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7. If $\cos x + \cos y + \cos \alpha = 0$ and $\sin x + \sin y + \sin \alpha = 0$ then $\cot\left(\frac{x+y}{2}\right) =$

A. $\sin \alpha$

B. $\cos \alpha$

C. $\cot \alpha$

D. $\sin\left(\frac{x+y}{2}\right)$

Answer: B

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8. $(\cos A + \cos B)^2 + (\sin A - \sin B)^2$ is equal to

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

B. $4\cos^2\left(\frac{A+B}{2}\right)$

C. $4\sin^2\left(\frac{A-B}{2}\right)$

D. $4\sin^2\left(\frac{A+B}{2}\right)$

Answer: B

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9. $\cos^2\alpha + \cos^2(\alpha + 120^\circ) + \cos^2(\alpha - 120^\circ)$ is equal to

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

B. 1

C. $\frac{1}{2}$

D. 0

Answer: B

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10. If $\frac{\cos\ (A+B)}{\cos\ (A-B)} = \frac{\sin\ (C+D)}{\sin\ (C-D)}$, prove that tan A tan B tan C + tan D=0

A. 0

B. -1

C. $\sqrt{3}$

D. 1

Answer: D

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11. $\frac{\sin^2 A - \sin^2 B}{\sin A \cos A - \sin B \cos B} = \tan(A + B)$

A. $\tan(A - B)$

B. $\tan(A + B)$

C. $\cot(A - B)$

D. $\cot(A + B)$

Answer: B

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12. The value of $\cos\frac{\pi}{11} + \cos\frac{3\pi}{11} + \cos\frac{5\pi}{11} + \cos\frac{7\pi}{11} + \cos\frac{9\pi}{11}$, is

A. 0

B. 1

C. $\frac{1}{2}$

D. $\frac{1}{4}$

Answer: C

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13. If $\cos A = \frac{3}{4}$ then the value of $\sin\left(\frac{A}{2}\right)\sin\left(\frac{5A}{2}\right)$ is

A. $\frac{\sqrt{11}}{16}$

B. $-\frac{\sqrt{11}}{16}$

C. $\frac{11}{16}$

D. $-\frac{11}{16}$

Answer: C

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14. The value of $\sin\frac{\pi}{16}\sin\frac{3\pi}{16}\sin\frac{5\pi}{16}\sin\frac{7\pi}{16}$ is

A. $\frac{1}{16}$

B. $\frac{\sqrt{2}}{16}$

C. $\frac{1}{8}$

D. $\frac{\sqrt{2}}{8}$

Answer: B

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15. $\sin 20^\circ \sin 40^\circ \sin 60^\circ \sin 80^\circ =$

A. $\frac{-3}{16}$

B. $\frac{5}{16}$

C. $\frac{3}{16}$

D. $\frac{-5}{16}$

Answer: C

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16. Prove that $\tan 20^\circ \tan 40^\circ \tan 80^\circ = \tan 60^\circ$

A. 1

B. 2

C. 3

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

Answer: C

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17. The value of $\frac{\tan 70^\circ - \tan 20^\circ}{\tan 50^\circ} =$

A. 1

B. 2

C. 3

D. 0

Answer: B

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18. The value of $\tan 20^\circ + 2\tan 50^\circ - \tan 70^\circ$, is

A. 1

B. 0

C. $\tan 50^\circ$

D. $\tan 70^\circ$

Answer: B

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19. $\cos ec48^\circ + \cos ec96^\circ + \cos ec192^\circ + \cos ec384^\circ =$

A. $4\sqrt{3}$

B. 0

C. $-4\sqrt{3}$

D. 1

Answer: B

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20. If the value of $\cos\left(\frac{2\pi}{7}\right)+\cos\left(\frac{4\pi}{7}\right)+\cos\left(\frac{6\pi}{7}\right)+\cos\left(\left(7\frac{\pi}{7}\right)\right)=-\frac{l}{2}$ Find the value of l

A. 1

B. -1

C. $\frac{1}{2}$

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

Answer: D

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21. The expression $\cos^2(A-B)+\cos^2 B-2\cos(A-B)\cos A\cos B$ is

A. dependent on B

B. dependent on A-B

C. dependent on A

D. independent of A and B

Answer: C

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22. If $A=\tan 6^\circ \tan 42^\circ$ and $B=\cot 66^\circ \cot 78^\circ$ then-

A. $3A=2B$

B. $A=B$

C. $A = 2B$

D. $A = \frac{1}{3}$

Answer: B

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23. If A, B, C are the angles of a triangle, then $\sin 2A + \sin 2B - \sin 2C$ is equal to

A. $4 \sin A \cos B \cos C$

B. $4 \cos A$

C. $4 \sin A \cos A$

D. $4 \cos A \cos B \sin C$

Answer: D

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24. If $A + B + C = \pi$, prove that

$\cos 2A + \cos 2B + \cos 2C = -1 - 4\cos A \cos B \cos C.$

A. $-1 + 4\sin A \cos B \sin C$

B. $-1 + 4\sin A \sin B \cos C$

C. $-1 - 4\cos A \cos B \cos C$

D. $1 + 4\sin A \sin B \sin C$

Answer: C

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25. If $x + y + z = 180^\circ$, then $\cos 2x + \cos 2y - \cos 2z$ is equal to

A. $4\sin x \sin y \sin z$

B. $1 - 4\sin x \sin y \cos z$

C. $4\sin x \sin y \sin z - 1$

D. $\cos x \cos y \cos z$

Answer: B

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26. If $A + B + C = 3\frac{\pi}{2}$. Then $\cos 2A + \cos 2B + \cos 2C$ is equal to

A. $1 - 4\cos A \cos B \cos C$

B. $4\sin A \sin B \sin C$

C. $1 + 2\cos A \cos B \cos C$

D. $1 - 4\sin A \sin B \sin C$

Answer: D

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27. if $A + B + C = \pi$ then

$$\frac{\cos A}{\sin B \sin C} + \frac{\cos B}{\sin C \sin A} + \frac{\cos C}{\sin A \sin B} =$$

A. 0

B. 1

C. 2

D. 3

Answer: C

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28. If A, B, C are the angles of a triangle then $\sin^2 A + \sin^2 B + \sin^2 C - 2\cos A \cos B \cos C$ is equal to

A. 1

B. 2

C. 3

D. 4

Answer: B

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29. Prove that: $\cos^2 A + \cos^2\left(A + \frac{\pi}{3}\right) + \cos^2\left(A - \frac{\pi}{3}\right) = \frac{3}{2}$

A. 0

B. $\frac{1}{2}$

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

D. 1

Answer: C

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30. If $A + B + C = \pi$ then prove that $\cos^2\left(\frac{A}{2}\right) + \cos^2\left(\frac{B}{2}\right) - \cos^2\left(\frac{C}{2}\right) = 2\cos\left(\frac{A}{2}\right)\cos\left(\frac{B}{2}\right)\sin\left(\frac{C}{2}\right)$

A. $2\cos\frac{A}{2} + \cos^2\frac{B}{2} - \cos^2\frac{C}{2}$

B. $4\cos\frac{A}{2}\cos\frac{B}{2}\sin\frac{C}{2}$

C. $1-2\cos\frac{A}{2}\cos\frac{B}{2}\sin\frac{C}{2}$

D. $1-4\cos\frac{A}{2}\cos\frac{B}{2}\sin\frac{C}{2}$

Answer: A

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31. In a triangle ABC, the value of $\sin A+\sin B+\sin C$ is

A. $4\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$

B. $4\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

C. $4\cos\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$

D. $4\cos\frac{A}{2}\sin\frac{B}{2}\cos\frac{C}{2}$

Answer: B

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32. If $A+B+C=180^\circ$ then $\frac{\sin 2A+\sin 2B+\sin 2C}{\cos A+\cos B+\cos C-1}=$

A. $8\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$

B. $8\cos\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

C. $8\sin\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

D. $8\cos\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$

Answer: B

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33. If $\alpha+\beta+\gamma=2\pi$ then

A. $\tan\frac{\alpha}{2}+\tan\frac{\beta}{2}+\tan\frac{\gamma}{2}=\tan\frac{\alpha}{2}\tan\frac{\beta}{2}\tan\frac{\gamma}{2}$

B. $\tan\frac{\alpha}{2}+\tan\frac{\beta}{2}+\tan\frac{\gamma}{2}=\tan\frac{\alpha}{2}\tan\frac{\beta}{2}\tan\frac{\gamma}{2}$

C. $\tan\frac{\alpha}{2}\tan\frac{\beta}{2}+\tan\frac{\beta}{2}\tan\frac{\gamma}{2}+\tan\frac{\gamma}{2}\tan\frac{\alpha}{2}=1$

D. $\tan\alpha\tan\beta+\tan\beta\tan\gamma+\tan\gamma\tan\alpha=1$

Answer: A

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34. In a $\Delta ABC \sum \left(\frac{\cot A + \cot B}{\tan A + \tan B} \right)$ is equal to

A. 1

B. 2

C. -1

D. -2

Answer: A

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Cometitive Thinking

1. $\sin 47^\circ + \sin 61^\circ - \sin 11^\circ - \sin 25^\circ =$

A. $\sin 36^\circ$

B. $\cos 36^\circ$

C. $\sin 7^\circ$

D. $\cos 7^\circ$

Answer: D

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2. $\cos A + \cos(240^\circ + A) + \cos(240^\circ - A) =$

A. $\cos A$

B. 0

C. $\sqrt{3}\sin A$

D. $\sqrt{3}\cos A$

Answer: B

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3. The expression $\frac{\cos(10\pi)}{13} + \frac{\cos(8\pi)}{13} + \frac{\cos(3\pi)}{13} + \frac{\cos(5\pi)}{13}$ is equal to

A. -1

B. 0

C. 1

D. None of these

Answer: B

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4. $2\cos\frac{\pi}{13}\cos\frac{9\pi}{13} + \cos\frac{3\pi}{13} + \cos\frac{5\pi}{13} = 0$

A. -1

B. 0

C. 1

D. $\frac{1}{2}$

Answer: B

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5. $2\cos x - \cos 3x - \cos 5x =$

A. $16\cos^3 x \sin^2 x$

B. $16\sin^2 x \cos^2 x$

C. $4\cos^2 x \sin^2 x$

D. $4\sin^2 x \cos^2 x$

Answer: A

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6. $1+\cos 10^{\circ}+\cos 20^{\circ}+cso30^{\circ}=$

A. $4\cos 5^{\circ}\cos 10^{\circ}\cos 15^{\circ}$

B. $4\cos 10^{\circ}\cos 20^{\circ}\cos 30^{\circ}$

C. $4\sin 5^{\circ}\sin 10^{\circ}\sin 15^{\circ}$

D. $4\sin 10^{\circ}\sin 20^{\circ}\sin 30^{\circ}$

Answer: A

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7. $1+cso56^{\circ}+\cos 58^{\circ}-\cos 66^{\circ}=$

A. $2\cos 28^{\circ}\cos 29^{\circ}\cos 33^{\circ}$

B. $4\cos 28^{\circ}\cos 29^{\circ}\cos 33^{\circ}$

C. $4\cos 28^{\circ}\cos 29^{\circ}\sin 33^{\circ}$

D. $2\cos 28^{\circ}\cos 29^{\circ}\sin 33^{\circ}$

Answer: C

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8. $\frac{\sin 85^\circ - \sin 25^\circ}{\cos 65^\circ} =$

A. 2

B. -1

C. 1

D. 0

Answer: C

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9. The value of $\frac{\sin 55^\circ - \cos 55^\circ}{\sin 10^\circ}$ is

A. $\frac{1}{\sqrt{2}}$

B. 2

C. 1

D. $\sqrt{2}$

Answer: D

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10. $\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ = \ldots\ldots\ldots\ldots\ldots ??$

A. $\frac{1}{2}$

B. 2

C. 4

D. 8

Answer: C

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11. $\frac{\sin A - \sin B}{\cos A + \cos B}$ is equal to

A. $\sin\left(\frac{A+B}{2}\right)$

B. $2\tan(A+B)$

C. $\cot\left(\frac{A-B}{2}\right)$

D. $\tan\left(\frac{A-B}{2}\right)$

Answer: D

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12. $\frac{\sin(B+A)+\cos(B-A)}{\sin(B-A)+\cos(B+A)}$ is equal to

A. $\frac{\cos B + \sin B}{\cos B - \sin B}$

B. $\frac{csoA + \sin A}{\cos A - \sin A}$

C. $\frac{\cos A - \sin A}{\cos A + \sin A}$

D. $\frac{csoB - \sin B}{\cos B + \sin B}$

Answer: B

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13. If $si4A - \cos 2A = cso4A - \sin 2A\left(0 < A < \frac{\pi}{4}\right)$, then the value of $\tan 4A =$

A. 1

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

C. $\sqrt{3}$

D. $\frac{\sqrt{3}-1}{\sqrt{3}+1}$

Answer: C

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14. If sin x + sin y = $\frac{1}{2}$ and cos x + cos y = 1 then tan (x + y)

A. $\frac{-8}{3}$

B. $\frac{8}{3}$

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

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

Answer: C

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15. If $\cos x = 3, \cos y,$ then $2\tan\left(\frac{y-x}{2}\right) =$

A. $\cot\left(\frac{y-x}{2}\right)$

B. $\cot\left(\frac{x+y}{4}\right)$

C. $\cot\left(\frac{y-x}{4}\right)$

D. $\cot\left(\frac{x+y}{2}\right)$

Answer: D

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16. If $\cos A = m \cos B$, then

A. $\cot\left(\frac{A+B}{2}\right) = \frac{m+1}{m-1}\tan\left(\frac{B-A}{2}\right)$

B. $\tan\left(\frac{A+B}{2}\right) = \frac{m+1}{m-1}\cot\left(\frac{B-1}{2}\right)$

C. $\cot\left(\frac{A+B}{2}\right) = \frac{m+1}{m-1}\cot\left(\frac{B-A}{2}\right)$

D. None of these

Answer: A

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17. The sum $S = \sin\theta + \sin 2\theta + \ldots + \sin n\theta$, equals

A. $\frac{\sin\frac{n\theta}{2}\sin\frac{\theta(n+1)}{2}}{\sin\frac{\theta}{2}}$

B. $\frac{\sin\frac{n\theta}{2}\cos\frac{\theta(n+1)}{2}}{\sin\frac{\theta}{2}}$

C. $\frac{\cos\frac{n\theta}{2}\sin\frac{\theta(n+1)}{2}}{\sin\frac{\theta}{2}}$

D. $\frac{\cos\frac{n\theta}{2}\cos\frac{\theta(n+1)}{2}}{\sin\frac{\theta}{2}}$

Answer: A

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18. $\cos.\frac{2\pi}{7}+\cos.\frac{4\pi}{7}+\cos.\frac{6\pi}{7}$

A. is equal to zero

B. lies between 0 and 3

C. is a negative number

D. ilies between 3 and 6

Answer: C

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19. If $\cos A = \frac{3}{4}, then 32 \sin, \frac{A}{2} \sin, \frac{5A}{2} =$ (A) $\sqrt{11}$ (B) `-sqrt(11) (C) 11 (D) -11

A. $\sqrt{7}$

B. $-\sqrt{7}$

C. 7

D. -7

Answer: B

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20. $\sin 12^\circ \sin 48^\circ \sin 54^\circ$ is equal to

A. $\frac{1}{16}$

B. $\frac{1}{32}$

C. $\frac{1}{8}$

D. $\frac{1}{4}$

Answer: C

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21. $\sin 12^\circ \sin 24^\circ \sin 48^\circ \sin 84^\circ =$

A. $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ$

B. $\sin 20^\circ \sin 40^\circ \sin 60^\circ \sin 80^\circ$

C. $\frac{3}{15}$

D. $\frac{5}{16}$

Answer: A

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22. $\left(1+\cos.\frac{\pi}{8}\right)\left(1+\cos.\frac{3\pi}{8}\right)\left(1+\cos.\frac{5\pi}{8}\right)\left(1+\cos.\frac{7\pi}{8}\right)$ is equal to

A. $\frac{1}{2}$

B. $\frac{1}{4}$

C. $\frac{1}{8}$

D. $\frac{1}{16}$

Answer: C

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23. If $m\tan(\theta - 30^0) = n\tan(\theta + 120^0)$ then $\frac{m+n}{m-n}$ is equal to

A. $2\cos 2\theta$

B. $\cos 2\theta$

C. $2\sin 2\theta$

D. $\sin 2\theta$

Answer: A

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24. The vlaue of $\cos^2 76^\circ + \cos^2 16 - \cos 76^\circ \cos 16^\circ$, is

A. $-\frac{1}{4}$

B. $\frac{1}{2}$

C. 0

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

Answer: D

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25. $2\sin^2\beta + 4\cos(\alpha+\beta)\sin\alpha\sin\beta + \cos 2(\alpha+\beta) =$

A. $\sin 2\alpha$

B. $\cos 2\beta$

C. $\cos 2\alpha$

D. $\sin 2\beta$

Answer: C

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26. In triangle ABC, the value of $\sin 2A + \sin 2B + \sin 2C$ is equal to

A. $4 \sin A \sin B \sin C$

B. $4 \cos A \cos B \cos C$

C. $2 \cos A \cos B \cos C$

D. $2 \sin A \sin B \sin C$

Answer: A

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27. If $A+B+C=\pi$ and $\cos A=\cos B\cos C$ then $\tan B\tan C$ is equal to

A. $\frac{1}{2}$

B. 2

C. 1

D. $-\frac{1}{2}$

Answer: B

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28. If A,B ,C are the angle of ΔABC then $\cot A.\cot B+\cot B.\cot C+\cot C.\cot A=$

A. 0

B. 1

C. 2

D. -1

Answer: B

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29. If $A+B+C=180^\circ$ then the value of $(\cot B+\cot C)(\cot C+\cot A)(\cot A+\cot B)$ will be

A. $\sec A \sec B \sec C$

B. $\cos ecA \cos ecb \cos ecC$

C. $\tan A \tan B \tan C$

D. 1

Answer: B

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30. If $A + b + C = \pi$ then $\frac{\tan A + \tan B + \tan C}{\tan A \dot{a}n B \tan \dot{C}}$

A. 0

B. 2

C. 1

D. -1

Answer: C

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31. In a $\triangle ABC \angle A = \frac{\pi}{2}$ then $\cos^2 B + \cos^2 C =$

A. -2

B. -1

C. 0

D. 1

Answer: D

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32. If $A+B+C=180^\circ$, then the value of $\cot.\frac{A}{2}+\cot.\frac{B}{2}+\cot.\frac{C}{2}$ will be

A. $2\cot\frac{A}{2}\cot\frac{B}{2}\cot\frac{C}{2}$

B. $4\cot\frac{A}{2}\cot\frac{B}{2}\cot\frac{C}{2}$

C. $\cot\frac{A}{2}\cot\frac{B}{2}\cot\frac{C}{2}$

D. $8\cot\frac{A}{2}\cot\frac{B}{2}\cot\frac{C}{2}$

Answer: C

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33. Let A, B and C are the angles of a plain triangle and $\tan\left(\frac{A}{2}\right)=\frac{1}{3},\tan\left(\frac{B}{2}\right)=\frac{2}{3}$ .then $\tan\left(\frac{C}{2}\right)$ is equal to

A. $\frac{7}{9}$

B. $\frac{2}{9}$

C. $\frac{1}{3}$

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

Answer: A

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34. In any triangle ABC. $\sin^2\frac{A}{2}+\sin^2\frac{B}{2}+\sin^2\frac{C}{2}$ is equal to

A. $1-2\cos\frac{A}{2}\cos\frac{B}{2}cso\frac{C}{2}$

B. $1-2\sin\frac{A}{2}\cos\frac{B}{2}\cos\frac{C}{2}$

C. $1-2\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2}$

D. $1-2\cos\frac{A}{2}\cos\frac{B}{2}\sin\frac{C}{2}$

Answer: C

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Evaluation Test

1. If $A + B + C = 180^\circ$, then $\Sigma \tan. \frac{A}{2} \tan. \frac{B}{2}$ is

A. 0

B. 1

C. 2

D. 3

Answer: B

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2. If $\alpha + \beta - \gamma = \pi$, prove that $\sin^2 \alpha + \sin^2 \beta - \sin^2 \gamma = 2 \sin \alpha \sin \beta \cos \gamma$.

A. $2 \sin \alpha \sin \beta \cos \gamma$

B. $2\cos\alpha\cos\beta\cos\gamma$

C. $2\sin\alpha\sin\beta\sin\gamma$

D. None of these

Answer: A

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3. If $\cos\theta+\cos 7\theta+\cos 3\theta+\cos 5\theta=0,$ then θ is

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

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

C. $\frac{n\pi}{8}$

D. None of these

Answer: C

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4. if $\sin A + \sin B = C$ and $\cos A + \cos B = D$ and $C, D \neq 0$ then the value of $\sin(A + B)$ is equal to

A. CD

B. $\frac{CD}{C^2 + D^2}$

C. $\frac{C^2 + D^2}{2CD}$

D. $\frac{2CD}{C^2 + D^2}$

Answer: D

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5. If $\alpha, \beta, \gamma \in [0, \pi]$ and α, β, γ are in AP, then $\frac{\sin\alpha - \sin\gamma}{\cos\gamma - \cos\alpha}$ is equal to

A. $\sin\beta$

B. $\cos\beta$

C. $\cot\beta$

D. $2\cos\beta$

Answer: C

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6. Suppose $\sin^3 x \sin 3x = \sum_{m=0}^{n} C_m \cos mx$ is an identity in x, where C_0, C_1, C_n are constants and $C_n \neq 0$, the the value of n is _____

A. 15

B. 6

C. 1

D. 0

Answer: B

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7. Given $\sin B = \frac{1}{5} \cdot \sin(2A + B)$ then $\tan(A + B) = k \tan A,$ where k has the value equal to

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

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

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

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

Answer: C

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8. If $\sin A + \sin 2A + \sin^3 A = \cos A + \cos 2A + \cos 3A,$ then $\tan 2A$ is equal to

A. 1

B. -1

C. $\frac{1}{2}$

D. $-\frac{1}{2}$

Answer: A

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