



MATHS

BOOKS - ARIHANT PUBLICATION BIHAR

TRIGONOMETRIC RATIOS

Solved Examples

1. If $\sin \theta = \frac{8}{17}$ then the value of $\cos \theta$ and $\tan \theta$ is

A. $\frac{15}{17}, \frac{8}{15}$

B. $\frac{15}{8}, \frac{8}{15}$

C. $\frac{15}{17}, \frac{15}{8}$

D. None of these

Answer: A

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2. If $\cot A = \frac{1}{\sqrt{2}-1}$ then $\sin A - \cos A$ is equal to

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

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

C. $\frac{\sqrt{2}}{4}$

D. 1

Answer: C

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Exam Booster For Cracking Exam

1. $\triangle ABC$ has a right angle at A. If $BC = \sqrt{2}$ and $AB = AC = 1$, then $\sin B$ is equal to

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

B. $\sqrt{2}$

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

D. $\sqrt{3}$

Answer: A



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2. In $\triangle PQR$, Q is a right angle, $PQ = 3$ and $QR = 4$. If $\angle P = \alpha$ and $R = \beta$, then $\tan \beta$ is equal to

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

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

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

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

Answer: B



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3. If $\sin B = \frac{1}{2}$, then $3 \cos B - 4 \cos^3 B$ is equal to

A. 1

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

C. 0

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

Answer: C



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4. If $\sec \alpha = \frac{5}{4}$, then $\frac{\tan \alpha}{1 + \tan^2 \alpha}$ is equal to

A. $\frac{9}{25}$

B. $\frac{12}{25}$

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

D. $\frac{1}{25}$

Answer: B



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5.

If

$\tan A = 1$ and $\tan B = \sqrt{3}$, evaluate $\cos A \cos B - \sin A \sin B$.

A. $\frac{1 + \sqrt{3}}{2\sqrt{2}}$

B. $\frac{1 - \sqrt{3}}{2\sqrt{2}}$

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

D. 1

Answer: B



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6. If $3 \tan \theta = 4$, then $\sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}}$ is equal to

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

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

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

D. None of these

Answer: C

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7. If $16 \cot \theta = 12$, then $\frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta}$ is equal to

A. 7

B. -7

C. $\frac{1}{7}$

D. $\frac{2}{7}$

Answer: A



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8. If $\tan \theta + \frac{1}{\tan \theta} = 2$, find the value of $\tan^2 \theta + \frac{1}{\tan^2 \theta}$

A. 6

B. 4

C. 2

D. 3

Answer: C



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9. If $\tan \theta = \frac{12}{13}$ then value of $\frac{2 \sin \theta \cos \theta}{\cos^2 \theta - \sin^2 \theta}$ is

A. $\frac{123}{25}$

B. $\frac{312}{25}$

C. $\frac{231}{25}$

D. $\frac{192}{25}$

Answer: B



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10. If $\sec \theta = \frac{13}{5}$ then $\frac{2 \sin \theta - 3 \cos \theta}{4 \sin \theta - 9 \cos \theta}$ is equal to

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

B. -3

C. 3

D. 2

Answer: C

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11. The value of x, if $x \cos^2 45^\circ - \sec^2 60^\circ + \sin^2 30^\circ = \frac{1}{8}$,

is

A. 31

B. 32

C. $\frac{31}{8}$

D. None of these

Answer: C



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12. If $\sqrt{2} \tan 2\theta - 3 = 0$, then the angle θ is

A. 30°

B. 60°

C. 90°

D. None of these

Answer: A



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13. If $\tan(A - B) = \frac{1}{\sqrt{3}}$ and $\tan(A + B) = \sqrt{3}$. then

the values of A and B are

A. $45^\circ, 15^\circ$

B. $40^\circ, 20^\circ$

C. $30^\circ, 60^\circ$

D. None of these

Answer: A



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14. If $\sqrt{2}\sin(60^\circ - \theta) = 1$, then the value of θ is

A. 20°

B. 30°

C. 15°

D. None of these

Answer: C



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15. ABC is a right angled triangle, right angled at C. If

$\angle A = 60^\circ$ and $AB = 40$ unit, then the length of AC is

A. 30 unit

B. 20 unit

C. 40 unit

D. None of these

Answer: B

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16. In a rectangle ABCD , $AB = 15$ cm and $\angle BAC = 60^\circ$, then the length of side BC is

A. $15\sqrt{2}$ cm

B. 15 cm

C. $15\sqrt{5}$ cm

D. $15\sqrt{3}$ cm

Answer: D



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17. The altitude AD of a ABC , in which $\angle A$ obtuse and, $AD = 10cm$. If $BD = 10cm$ and $CD = 10\sqrt{3}cm$, determine $\angle A$.

A. 60°

B. 30°

C. 105°

D. None of these

Answer: C



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18. If a rhombus of side 10 cm has two angles of 60° each.

Then the length of diagonals (in cm) are

A. $10\sqrt{3}$, 10

B. $10\sqrt{2}$, 10

C. 5,10

D. None of these

Answer: A



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19. If $\cos 2x = \cos 60^\circ \cos 30^\circ + \sin 60^\circ \sin 30^\circ$, then the value of x is

A. 15°

B. 40°

C. 30°

D. None of these

Answer: A



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20. If $3 \sec A - 2 \cos B = \sqrt{3}$ and $\angle B = 30^\circ$, then the value of $\cos (A - B)$ is

A. 1

B. 2

C. 3

D. 0

Answer: A



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21. The value of

$$\frac{\tan^2 60^\circ + 4 \sin^2 45^\circ + 3 \sec^2 30^\circ + 5 \cos^2 90^\circ}{\operatorname{cosec} 30^\circ + \sec 60^\circ - \cot^2 30^\circ}$$
 is

A. 5

B. 3

C. 9

D. 2

Answer: C



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22. If $\sin \theta = -\frac{12}{13}$ and $\pi < \theta < \frac{3\pi}{2}$, then the values of $\sec \theta$ is

A. $\frac{13}{5}$

B. $-\frac{13}{5}$

C. $-\frac{12}{13}$

D. None of these

Answer: B



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23. If $\sin \theta = \frac{5}{13}$, then the values of $\tan \theta$ and $\sec \theta$ respectively, are

A. $\frac{5}{12}, \frac{13}{12}$

B. $\frac{11}{13}, \frac{5}{12}$

C. $\frac{14}{19}, \frac{5}{12}$

D. $\frac{5}{13}, \frac{5}{12}$

Answer: A

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24. The value of

$$\frac{\cos(90^\circ + A)\sec(360^\circ - A)\tan(180^\circ - A)}{\sec(A - 720^\circ)\sin(540^\circ + A)\cot(A - 90^\circ)}$$
 is

A. 0

B. 1

C. ∞

D. None of these

Answer: B



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25. If $\tan \theta + \sin \theta = 1$, then $\cos^2 \theta = n$ then $m^2 - n^2$ is equal

A. $4\sqrt{mn}$

B. \sqrt{mn}

C. $2\sqrt{mn}$

D. None of these

Answer: A



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