# ©゙doubtnut 

India's Number 1 Education App

## MATHS

## BOOKS - PREMIERS PUBLISHERS

## TRIGONOMETRY

Solution To Exercise 61

1. Prove that following identities
$\cot \theta+\tan \theta=\sec \theta \operatorname{cosec} \theta$

Watch Video Solution
2. Prove that following identities
$\tan ^{4} \theta+\tan ^{2} \theta=\sec ^{4} \theta-\sec ^{2} \theta$
3. Prove that following identities
$\frac{1-\tan ^{2} \theta}{\cot ^{2} \theta-1}=\tan ^{2} \theta$

## - Watch Video Solution

4. Prove that following identities
$\frac{\cos \theta}{1+\sin \theta}=\sec \theta-\tan \theta$

## - Watch Video Solution

5. Prove that following identities
$\sqrt{\frac{1+\sin \theta}{1-\sin \theta}}=\sec \theta+\tan \theta$

- Watch Video Solution

6. Prove that following identities
$\sqrt{\frac{1+\sin \theta}{1-\sin \theta}}+\sqrt{\frac{1-\sin \theta}{1+\sin \theta}}=2 \sec \theta$

## - Watch Video Solution

7. Prove that following identities
$\sec ^{6} \theta=\tan ^{6} \theta+3 \tan ^{2} \theta \sec ^{2} \theta+1$

## - Watch Video Solution

8. Prove that following identities
$(\sin \theta+\sec \theta)^{2}+(\cos \theta+\operatorname{cosec} \theta)^{2}=1+(\sec \theta+\operatorname{cosec} \theta)^{2}$

## - Watch Video Solution

9. Prove that following identities

$$
\sec ^{4} \theta\left(1-\sin ^{4} \theta\right)-2 \tan ^{2} \theta=1
$$

10. Prove that following identities
$\frac{\cot \theta-\cos \theta}{\cot \theta+\cos \theta}=\frac{\operatorname{cosec} \theta-1}{\operatorname{cosec} \theta+1}$

## - Watch Video Solution

11. Prove that following identities
$\frac{\sin A-\sin B}{\cos A+\cos B}+\frac{\cos A-\cos B}{\sin A+\sin B}=0$

## - Watch Video Solution

12. Prove that following identities
$\frac{\sin ^{3} A+\cos ^{3} A}{\sin A+\cos A}+\frac{\sin ^{3} A-\cos ^{3} A}{\sin A-\cos A}=2$

## - Watch Video Solution

13. If $\sin \theta+\cos \theta=\sqrt{3}$, then prove that $\tan \theta+\cot \theta=1$

## - Watch Video Solution

14. If $\sqrt{3} \sin \theta-\cos \theta=0$, then show that $\tan 3 \theta=\frac{3 \tan \theta-\tan ^{3} \theta}{1-3 \tan ^{3} \theta}$

## - Watch Video Solution

15. If $\frac{\cos \alpha}{\cos \beta}=m$ and $\frac{\cos \alpha}{\sin \beta}=n$ then prove that $\left(m^{2}+n^{2}\right) \cos ^{2} \beta=n^{2}$.

## - Watch Video Solution

16. If $\cot \theta+\tan \theta=x$ and $\sec \theta-\cos \theta=y$ then prove that $\left(x^{2} y\right)^{\frac{2}{3}}-\left(x y^{2}\right)^{\frac{2}{3}}=1$

## - Watch Video Solution

$\sin \theta+\cos \theta=p$ and $\sec \theta+\operatorname{cosec} \theta=q$, then prove that $q\left(p^{2}-1\right)=2 r$

## - Watch Video Solution

18. If $\sin \theta\left(1+\sin ^{2} \theta\right)=\cos ^{2} \theta$, then prove that $\cos ^{6} \theta-4 \cos ^{2} \theta+8 \cos ^{2} \theta=4$

## - Watch Video Solution

19. If $\frac{\cos \theta}{1+\sin \theta}=\frac{1}{a}$ then prove that $\frac{a^{2}-1}{a^{2}+1}=\sin \theta$.

## - Watch Video Solution

## Solution To Exercise 62

1. Find the angle of elevation of the top of a tower from a point on the ground, which is 30 m away the foot of a tower of height $10 \sqrt{3} \mathrm{~m}$.

## - Watch Video Solution

2. A road is flanked on either side by continuous rows of house of height $4 \sqrt{3} \mathrm{~m}$ with no space in between them. A pedestrain is standing on the median of the road facing a row house. The angle of elevationn from the pedestrain to the top of the house is $30^{\circ}$. Find the width of the road.

## - Watch Video Solution

3. To a man standing outside his house. The angles of elevation of the top and bottom of a window are $60^{\circ}$ and $45^{\circ}$ respectively. If the height of the man is 180 cm and if he is 5 m away from the wall. What is the height of the window? $(\sqrt{3}=1.732)$.
4. A statue 1.6 m tall stands on the top of a pedestal. From a point on the ground, the angle of elevation of the top of the statue is $60^{\circ}$ and from the same point angle of elevation of the top of the pedestal is $40^{\circ}$. Find the height of the pedestal. $\left(\tan 40^{\circ}=0.8361, \sqrt{3}=1.732\right)$

## ( Watch Video Solution

5. A flog pole ' $h$ ' metres is on the top of the hemispherical dome of radius ' $r$ ' metres. A man is standing 7 m away form the dome. Seeing the top of the pole at an angle $45^{\circ}$ and moving 5 m away from the dome and seeing the bottom of the pole at angle $30^{\circ}$. Find the height of the pole

## - Watch Video Solution

6. The top of a 15 m high tower make an angle of elevation of $60^{\circ}$ with the bottom of an electronic pole and angle of elevation of $30^{\circ}$ with the top of the pole. What is the height of the electric pole?

## (D) Watch Video Solution

7. A vertical pole fixed to the ground is divided in the ratio 1:9 by a mark on it with lower part shorter than the upper part. If the two parts subtend equal angles at a place on the ground, 25 m away from the base of the pole, what is the height of the pole?

## Watch Video Solution

8. A traveler approaches a mountain on highway. He measures the angle of elevation to the peak at each milestone. At two consecutive milestones the angles measured are $4^{\circ}$ and $8^{\circ}$. What is the height of the peak if the distance between consecutive milestones is 1 mile. $\left(\tan 4^{\circ}=0.0699, \tan 8^{\circ}=0.14405\right)$

## - Watch Video Solution

1. From the top of a rock $50 \operatorname{sqr}(3) \mathrm{m}$ high, the angle of depression of car on the ground is observed to be $30^{\circ}$. Find the distance of the car from the rock.

## - Watch Video Solution

2. The horizontal distance between two building is 70 m . The angle of depression of the top of the first building when seen from the top of the second building is $45^{\circ}$. If the height of the second building is 120 m , find the height of the first building.

## - Watch Video Solution

3. From the top of the tower 60 m high the angles of depression of the top and bottom of a vertical lamp post are observed to be $38^{\circ}$ and $60^{\circ}$ respectively. Find the height of the lamp post. $\left(\tan 38^{\circ}=0.7813, \sqrt{3}=1.732\right)$
4. An aeroplane at an altitude of 1800 m finds that two boats are selling towards it in the same direction. The angles of depressionn of the boats as obversed from the aeroplane are $60^{\circ}$ and $30^{\circ}$ respectively. Find the distance between the two boats. $(\sqrt{3}=1.732)$.

## - Watch Video Solution

5. From the top of a lighhouse, the angles of depression of two ships on the opposite sides of it are observed to be $30^{\circ}$ and $60^{\circ}$. If the height of the lighthouse is $h$ meters and the line joining the ships passes through the foot of the lighthouse. show that the distance between the ships is $\frac{4 h}{\sqrt{3}} \mathrm{~m}$.

## - Watch Video Solution

6. A lift in a building of height 90 feet with transparent glass walls is descending from the top of the building. At the top of the building, the angles of depression to a fountain in the garden is $60^{\circ}$. Two minutes later, the angle of depression reduces to $30^{\circ}$. If the fountain is $30 \sqrt{3}$ feet from the entrace of the lift, find the speed of the lift, and the speed of the lift which is descending.

## - Watch Video Solution

## Solution To Exercise 64

1. From the top of tree of height 13 m the angle of elevation and depression of the top and bottom of another tree are $45^{\circ}$ and $30^{\circ}$ respectively. Find the height of the seconds tree. $(\sqrt{3}=1.732)$.

## - Watch Video Solution

2. A man is standing on the deck of a ship, which is 40 m above water level. He observes the angle of elevation of the top of a hill as $60^{\circ}$ and the angle depression of the base of the hill as $30^{\circ}$. Calculate the distance of the hill from the ship and the height of the hill, $(\sqrt{3}=1.732)$.

## - Watch Video Solution

3. If the angle of elevation of a cloud from a point ' $h$ ' meterss above a take is $\theta_{1}$ and the angle of depression of its reflection in the take is $\theta_{2}$. Prove that the height that the cloud is located from the ground is $\frac{h\left(\tan \theta(1)+\tan \theta_{2}\right)}{\tan \theta_{2}-\tan \theta_{2}}$.

## - Watch Video Solution

4. The angle of elevation of the top of cell phone tower from the foot of a high apartment is $60^{\circ}$ and the angle of depression of the foot of the tower from the top of the apartment is $30^{\circ}$. If the height of the apartment is 50 m , find the height of the cell tower. According to
radiations control norms, the minimum height of the cell phone tower should be 120 m . State if the height of the above mentioned cell phone tower meets the radiation norms.

## - Watch Video Solution

5. The angles of elevation and depression of the top and bottom of a lamp post from the top of a 66 m high apartment are $60^{\circ}$ and $30^{\circ}$ respectively, find

The height of the lamp post.

## - Watch Video Solution

6. The angles of elevation and depression of the top and bottom of a lamp post from the top of a 66 m high apartment are $60^{\circ}$ and $30^{\circ}$ respectively, find

The difference between height of the lamp post and the apartment.
7. The angles of elevation and depression of the top and bottom of a lamp post from the top of a 66 m high apartment are $60^{\circ}$ and $30^{\circ}$ respectively, find

The distance between the lamp post and the apartment $(\sqrt{3}=1.773)$.

## - Watch Video Solution

8. Three villagers A, B and C can see each other across a valley. The horizontal distance between A and B is 8 km and the horizontal distance between $B$ and $C$ is 12 km . The angle of depression of $B$ from $A$ is $20^{\circ}$ and the angle of elevation of C from B is $30^{\circ}$. Calculate:
the vertical between $A$ and $B$.

## - Watch Video Solution

## Solution To Exercise 65

1. The value of $\sin ^{2} \theta+\frac{1}{1+\tan ^{2} \theta}$ is equal to
A. $\tan ^{2} \theta$
B. 1
C. $\cot ^{2} \theta$
D. 0

## Answer: B

## - Watch Video Solution

2. $\tan \theta \operatorname{cosec} 2 \theta-\tan \theta$ is equal to
A. $\sec \theta$
B. $\cot ^{2} \theta$
C. $\sin \theta$
D. $\cot \theta$

## - Watch Video Solution

3. $(\sin \alpha+\operatorname{cosec} \alpha)^{2}+(\cos \alpha-\sec \alpha)^{2}-\tan ^{2} \alpha-\cot ^{2} \alpha=?$
A. 9
B. 7
C. 5
D. 3

## Answer: B

Watch Video Solution
4. If $\sin \theta+\cos \theta=a$ and $\sec \theta+\operatorname{cosec} \theta=b$, then the value of $b\left(a^{2}-1\right)$ is equal to
A. 2a
B. 3a
C. 0
D. 2 ab

## Answer: A

## - Watch Video Solution

5. If $5 x=\sec \theta$ and $\frac{5}{x}=\tan \theta$, then $x^{2}-\frac{1}{x^{2}}$ is equal to
A. 25
B. $\frac{1}{25}$
C. 5
D. 1

## Answer: B

6. If $\sin \theta=\cos \theta$ then $2 \tan ^{2} \theta+\sin ^{2} \theta-1=\ldots$.
A. $\frac{-3}{2}$
B. $\frac{3}{2}$
C. $\frac{2}{3}$
D. $\frac{-2}{3}$

## Answer: B

## - Watch Video Solution

7. If $x=a \tan \theta$ and $y=b \sec \theta$ then
A. $\frac{y^{2}}{b^{2}}-\frac{x^{2}}{a^{2}}=1$
B. $\frac{x^{2}}{a^{2}}-\frac{y^{2}}{b^{2}}=1$
C. $\frac{x^{2}}{a^{2}}-\frac{y^{2}}{b^{2}}=1$
D. $\frac{x^{2}}{a^{2}}-\frac{y^{2}}{b^{2}}=0$

## Answer: A

## - Watch Video Solution

8. $(1+\tan \theta+\sec \theta)(1+\cot \theta-\operatorname{cosec} \theta)$ is equal to
A. 0
B. 1
C. 2
D. -1

Answer: C

- Watch Video Solution

9. $a \cot \theta+b \cos e c \theta=p$ and $b \cot \theta+a \cos e c \theta=q$ then $p^{2}-q^{2}$ is equal to
A. $a^{2}-b^{2}$
B. $b^{2}-a^{2}$
C. $a^{2}+b^{2}$
D. b-a

## Answer: B

## - Watch Video Solution

10. If the ratio of the height of a tower and the length of its shadow is
$\sqrt{3}: 1$, what is the angle of elevation of the Sun?
A. $45^{\circ}$
B. $30^{\circ}$
C. $90^{\circ}$
D. $60^{\circ}$

## Answer: D

## - Watch Video Solution

11. The electric pole subtends an angle of $30^{\circ}$ at a point on the same level as its foot. At a second point 'b' metres above the first, the depression of the foot of the tower is $60^{\circ}$. The height of the tower (in towers) is equal to
A. $\sqrt{3} b$
B. $\frac{b}{3}$
C. $\frac{b}{2}$
D. $\frac{b}{\sqrt{3}}$

## Answer: B

12. A tower is 60 m height. Its shadow is x metres shorter when the sun's altitude is $45^{\circ}$ than when it has been $30^{\circ}$, then x is equal to:
A. 41.92 m
B. 43.92 m
C. 43 m
D. 45.6 m

## Answer: B

## - Watch Video Solution

13. The angle of depression of the top and bottom of 20 m tall building from the top of a multistorised building are $30^{\circ}$ and $60^{\circ}$ respectively. The height of the multistoried building and the distances between two building (in metres) is
A. $20,10 \sqrt{3}$
B. $30,5 \sqrt{3}$
C. 20, 10
D. $30,10 \sqrt{3}$

## Answer: D

## - Watch Video Solution

14. Two persons are standing 'x' metres apart from each other and the height of the first person is double that of the other. If from the middle points of the linejoining their their feet an observe finds the angular elevations of their tops to be complementary, then the height of the shorter person (in metres) is
A. $\sqrt{2} x$
B. $\frac{x}{2 \sqrt{2}}$
C. $\frac{x}{\sqrt{2}}$
D. 2 x

## Answer: B

## - Watch Video Solution

15. The angle of elevation of a cloud from a point $h$ metres above a lake is $\beta$. The angle of depression of its reflection in the lake is $45^{\circ}$. The height of location of the cloud from the lake is
A. $\frac{h(1+\tan \beta)}{1-\tan \beta}$
B. $\frac{h(1-\tan \beta)}{1+\tan \beta}$
C. $h \tan \left(45^{\circ}-\beta\right)$
D. none of these

## Answer: A

## - Watch Video Solution

## 1. Prove that

$\cot ^{2} A((\sec A-1) /(1+\sin A))+\sec ^{2} A\left(\frac{\sin A-1}{1+\sec A}\right)=0$

## - Watch Video Solution

2. Prove that
$\frac{\tan ^{2} \theta-1}{\tan ^{2} \theta+1}=1-2 \cos ^{2} \theta$

## ( Watch Video Solution

3. Prove that $\left(\frac{1+\sin \theta-\cos \theta}{1+\sin \theta+\cos \theta}\right)^{2}=\frac{1-\cos \theta}{1+\cos \theta}$

## - Watch Video Solution

4. If $x \sin ^{3} \theta+y \cos ^{3} \theta=\sin \theta \cos \theta$ and $x \sin \theta=y \cos \theta$, then prove that $x^{2}+y^{2}=1$.
5. If $\mathrm{a} \cos \theta-\mathrm{b} \sin \theta=\mathrm{c}$, show that $\mathrm{a} \sin \theta+\mathrm{b} \cos \theta= \pm \sqrt{a^{2}+b^{2}-c^{2}}$

## Watch Video Solution

6. A bird is sitting on the top of a 80 m high tree. From a point on the ground, the angle of elevation of the bird is $45^{\circ}$. The bird flies away horizontallly in such away that it remained at a constant height from the ground. After 2 seconds, the angle

## - Watch Video Solution

7. An aeroplane is flying parallel to the Earth's surface at a speed of 175 $\mathrm{m} / \mathrm{sec}$ and at a height of 600 m . The anlge elevation of the aeroplane from a point on the Earth's surface is $37^{\circ}$ at a given point. After what period of time does the angle of elevation increase to $53^{\circ}$ ? $\left(\tan 53^{\circ}=1.3270, \tan 37^{\circ}=0.7536\right)$.
8. A bird is flying from $A$ towards $B$ at an angle of $35^{\circ}$, a point 30 km away from A. At B it charges its course of flight and heads towards $C$ on a bearing of $48^{\circ}$ and distance 32 km away.

How far is C to the North of B ?
A. How far is $B$ to the North of $A$ ?
B. How far is $B$ to the west of $A$ ?
C. How far is C to the North of B ?
D. How far is C to the East of B ?

## Answer:

## - Watch Video Solution

9. Two ships are sailing in the sea on either side of the lighthouse. The angles of depression of two ships as observed from the top of the
lighthouse are $60^{\circ}$ and $45^{\circ}$ respectively. If the distance between the ships is $200\left(\frac{\sqrt{3+1}}{\sqrt{3}}\right)$ metres, find the height of the lighthouse.

## - Watch Video Solution

10. A building and a statue are in opposite side of a street from each other 35 m apart. From a point on the roof of building the angle of elevationof the top of statue is $24^{\circ}$ and the angle of depression of base of base of the statue is $34^{\circ}$. Find the height of the statue.
$\left(\tan 24^{\circ}=0.4452, \tan 34^{\circ}=0.6745\right)$.

## - Watch Video Solution

## Solution To Thinking Corner

1. When will the values of $\sin \theta$ and $\cos \theta$ be equal?
2. For what values of $\theta, \sin \theta=2$ ?

## - Watch Video Solution

3. Among the six trigonometric quantities, as the value of angle $\theta$ increase from $0^{\circ}$ to $90^{\circ}$, which of the six trigonometric quantities has undefined values?

## - Watch Video Solution

4. The angle elevation of the top of a tower from a point $C$ on the ground.

Which is 30 m away from the foot of the tower is $30^{\circ}$. Find the height of
the tower.


## - Watch Video Solution

5. Let $0^{\circ} \leq \theta \leq 90^{\circ}$. For what values of $\theta$ does
A. $\sin \theta>\cos \theta$,
B. $\cos \theta>\sin \theta$,
C. $\sec \theta=2 \tan \theta$,
D. $\cos e c \theta=2 \cot \theta$.

## Answer:

6. What type of triangle is used to calculate heights and distances?

## - Watch Video Solution

7. When the height of the building and distances from the foot of the building is given, which trigonometric ratio is used to find the angle of elevation?

## - Watch Video Solution

8. If the line of sight and angle of elevation is given, then which trigonometric ratio is used to find the height of the building,

## - Watch Video Solution

9. If the line of sight and angle of elevation is given, then which trigonometric ratio is used to find the distance from the foot of the building.

## - Watch Video Solution

10. What is the minimum number of measurements required to determine the height or distance or angle of elevation?

## - Watch Video Solution

## Solution To Progress Check

1. The number of trigonometry ratio is $\qquad$ .

## - Watch Video Solution

2. $1-\cos ^{2} \theta$ is
3. $(\sec \theta+\tan \theta)(\sec \theta-\tan \theta)=. . . . . . . . . . .$.

## - Watch Video Solution

4. $(\cot \theta+\operatorname{cosec} \theta)(\cot \theta-\cos e c \theta)$ is $\qquad$

## - Watch Video Solution

5. $\operatorname{co6} 0^{\circ} \sin 30^{\circ}+\cos 30^{\circ} \sin 60^{\circ}=$ $\qquad$ .

## - Watch Video Solution

6. $\tan 60^{\circ} \cos 60^{\circ}+\cot 60^{\circ} \sin 60^{\circ}=$ _ $_{-}$.
7. $\left(\tan 45^{\circ}+\cot 45^{\circ}\right)+\left(\sec 45^{\circ} \operatorname{cosec} 45^{\circ}\right)$ is

## - Watch Video Solution

8. $\sec \theta=\operatorname{cosec} \theta$ if $\theta$ is $\qquad$

## - Watch Video Solution

9. $\cot \theta=\tan \theta$ if $\theta$ is

## - Watch Video Solution

10. The line drawn from the eye of an observe to the point of object is
11. When the line of sight is above the horizontal level the angle formed is
$\qquad$ .

## Watch Video Solution

12. The angle of elevation $\qquad$ as we move towards the foot of the vertical object.

## - Watch Video Solution

13. When the line of sight is above the horizontal level the angle formed is $\qquad$ .

## - Watch Video Solution

1. $\sec \left(90^{\circ}-\theta\right)=. . . . . . . . . . . . . . .$.
A. $\cos e c \theta$
B. $\tan \theta$
C. $\sin \theta$
D. $\cos \theta$

## Answer: A

## - Watch Video Solution

2. $\left(\cos 0^{\circ}+\sin 90^{\circ}\right) \times\left(\tan 30^{\circ} \times \tan 60^{\circ}\right)$ is:
A. 1
B. 2
C. 3
D. 0

## Answer: B

## - Watch Video Solution

3. $\sqrt{\cos e c^{2} \theta-\cot ^{2} \theta}$ is:
A. $\tan ^{2} \theta$
B. $\sin \theta$
C. 1
D. 0

## Answer: C

Watch Video Solution
4. $\frac{\cos e c \theta}{\cos \theta}-\frac{\cos \theta}{\sin \theta}=$ ?
A. $\sec ^{2} \theta$
B. $\cos e c \theta$
C. $\cot \theta$
D. $\tan \theta$

## Answer: D

## - Watch Video Solution

5. $(\sec \theta+\tan \theta)(\sec \theta-\tan \theta)=\ldots . . . . . . . . .$.
A. 0
B. 1
C. -1
D. not defined

## Answer: B

6. $\left(\tan 45^{\circ}+\cot 45^{\circ}\right)+\sec ^{2} 45^{\circ}=\ldots . . . . . . . .$.
A. 1
B. 2
C. 4
D. 3

## Answer: C

## - Watch Video Solution

7. $\cos 30^{\circ} \sin 60^{\circ}+\cos 60^{\circ} \sin 30^{\circ}=$
A. 1
B. 0
C. -1
D. $\frac{\sqrt{3}}{2}$

## D Watch Video Solution

8. $\sqrt{\frac{1+\sin \theta}{1-\sin \theta}}=\sec \theta+x$. Then x is:
A. $\sin \theta$
B. $\cos \theta$
C. $\tan \theta$
D. $\cot \theta$

## Answer: C

## ( Watch Video Solution

9. If $x=r \cos \theta, y=r \sin \theta$, then $x^{2}+y^{2}=$ ?
A. 1
B. $r$
C. $r^{2}$
D. $\sqrt{r}$

Answer: C

Watch Video Solution
10. In $\triangle A B C$ with $C=90^{\circ}, A C=B C=1$. Find $\cos \theta$.

A. $\frac{1}{2}$
B. $\frac{1}{\sqrt{2}}$
C. 1
D. $\sqrt{2}$

Answer: B
11. What is the minimum number of measurements required to determine the height or distance or angle of elevation?
A. 1
B. 2
C. 3
D. 4

## Answer: B

## - Watch Video Solution

12. Simplify: $\cos ^{2} \theta+\frac{1}{1+\cot ^{2} \theta}$ :
A. $\cot ^{2} \theta$
B. 1
C. $\tan ^{2} \theta$
D. 0

## Answer: B

## - Watch Video Solution

13. $(\sin \alpha+\cos e c \alpha)^{2}+(\cos \alpha-\sec \alpha)^{2}-\tan ^{2} \alpha-\cot ^{2} \alpha=$ ?
A. 4
B. 3
C. 7
D. 9

## Answer: B

14. If $x=a \cos \theta, y=b \sin \theta$ then $\frac{x^{2}}{a^{2}}+\frac{y^{2}}{b^{2}}=$ ?
A. 1
B. -1
C. 0
D. 2

## Answer: A

## - Watch Video Solution

15. If $\sin \theta=\cos \theta$, then the value of ' $\theta$ ' is $\qquad$ .
A. $30^{\circ}$
B. $60^{\circ}$
C. $90^{\circ}$
D. $45^{\circ}$

## D Watch Video Solution

16. If $\sin \theta=\frac{5}{13}$ then $\cos \theta=$ ?
A. $\frac{13}{5}$
B. $\frac{12}{13}$
C. $\frac{13}{12}$
D. $\frac{12}{5}$

## Answer: B

17. If $\tan \theta=\frac{3}{4}, \quad$ find $\frac{2 \sin \theta+3 \cos \theta}{3 \sin \theta+2 \cos \theta}$ is:
A. $\frac{17}{12}$
B. $\frac{12}{17}$
C. $\frac{18}{17}$
D. $\frac{17}{18}$

## Answer: C

## - Watch Video Solution

18. If $\sin \theta+\cos \theta=\sqrt{3}$ then $\tan \theta+\cot \theta=$ ?
A. $\frac{1}{\sqrt{3}}$
B. $\sqrt{3}$
C. 0
D. 1

## Answer: D

19. If $\sqrt{3} \sin \theta-\cos \theta=0$ then $3 \tan \theta-\tan ^{3} \theta$ is:
A. 1
B. 0
C. $\frac{2}{\sqrt{3}}$
D. $\frac{1}{\sqrt{3}}$

## Answer: C

## - View Text Solution

20. Simplify: $\frac{\sin (90-\theta) \cos \theta}{\cos (90-\theta) \sin \theta}+1=$
A. $\cos e c \theta$
B. $\cos e c^{2} \theta$
C. $\sec \theta$
D. $\sec ^{2} \theta$

## Answer: B

## - Watch Video Solution

21. A tower is 100 m high. Its shadow is x meters shorter, when the sun's attitude is $45^{\circ}$ than when it is $30^{\circ}$. Then value of x in meters is:
A. 92.6 m
B. 73.2 m
C. 173.2 m
D. 45.6 m

## Answer: B

22. Complete the following

| 22. | $\frac{1}{\sec \theta}$ | (a) 1 |
| :--- | :--- | :--- |
| 23. | $\cot (90-\theta)$ | (b) $\sec \theta$ |
| 24. | $\sqrt{1+\tan ^{2} \theta} \sqrt{1+\cot ^{2} \theta}(\sin \theta-\cos \theta)$ | (c) $\tan \theta$ |
| 25. | $1+\frac{\tan ^{2} \theta}{1+\sec \theta}=$ | (d) $\cos \theta$ |

- Watch Video Solution

