



Trigonometric Ratios Ex 5.2 Q33

Answer :

Given:

$$\sin(A + B) = 1 \dots\dots (1)$$

$$\cos(A - B) = 1 \dots\dots (2)$$

We know that,

$$\sin 90^\circ = 1 \dots\dots (3)$$

$$\cos 0^\circ = 1 \dots\dots (4)$$

Now by comparing equation (1) and (3)

We get,

$$A + B = 90 \dots\dots (5)$$

Now by comparing equation (2) and (4)

We get,

$$A - B = 0 \dots\dots (6)$$

Now to get the values of A and B , let us solve equation (5) and (6) simultaneously

Therefore by adding equation (5) and (6)

We get,

$$\begin{array}{r} A + B = 90 \\ + A - B = 0 \\ \hline 2A + 0 = 90 \end{array}$$

Therefore,

$$2A = 90$$

$$\Rightarrow A = \frac{90}{2}$$

$$\Rightarrow A = 45^\circ$$

Hence $A = 45^\circ$

Now by subtracting equation (6) from equation (5)

We get,

$$\begin{array}{r} A + B = 90 \\ - A - B = 0 \\ \hline (-) (+) (-) \\ 0 + 2B = 90 \end{array}$$

Therefore,

$$2B = 90$$

$$\Rightarrow B = \frac{90}{2}$$

$$\Rightarrow B = 45^\circ$$

Hence $B = 45^\circ$

Therefore the values of A and B are as follows

$$A = 45^\circ \text{ and } B = 45^\circ$$

Answer :

Given:

$$\tan(A - B) = \frac{1}{\sqrt{3}} \dots\dots (1)$$

$$\tan(A + B) = \sqrt{3} \dots\dots (2)$$

We know that,

$$\tan 30^\circ = \frac{1}{\sqrt{3}} \dots\dots (3)$$

$$\tan 60^\circ = \sqrt{3} \dots\dots (4)$$

Now by comparing equation (1) and (3)

We get,

$$A - B = 30 \dots\dots (5)$$

Now by comparing equation (2) and (4)

We get,

$$A + B = 60 \dots\dots (6)$$

Now to get the values of A and B , let us solve equation (5) and (6) simultaneously

Therefore by adding equation (5) and (6)

We get,

$$\begin{array}{r} A - B = 90 \\ + A + B = 0 \\ \hline 2A + 0 = 90 \end{array}$$

Therefore,

$$2A = 90$$

$$\Rightarrow A = \frac{90}{2}$$

$$\Rightarrow A = 45^\circ$$

Hence $\boxed{A = 45^\circ}$

Now by subtracting equation (5) from equation (6)

We get,

$$\begin{array}{r} A + B = 60 \\ - A - B = 30 \\ \hline (-) (+) (-) \\ 0 + 2B = 30 \end{array}$$

Therefore,

$$2B = 30$$

$$\Rightarrow B = \frac{30}{2}$$

$$\Rightarrow B = 15^\circ$$

Hence $\boxed{B = 15^\circ}$

Therefore the values of A and B are as follows

$$\boxed{A = 45^\circ} \text{ and } \boxed{B = 15^\circ}$$

Answer :

Given:

$$\sin(A - B) = \frac{1}{2} \dots\dots (1)$$

$$\cos(A + B) = \frac{1}{2} \dots\dots (2)$$

We know that,

$$\sin 30^\circ = \frac{1}{2} \dots\dots (3)$$

$$\cos 60^\circ = \frac{1}{2} \dots\dots (4)$$

Now by comparing equation (1) and (3)

We get,

$$A - B = 30 \dots\dots (5)$$

Now by comparing equation (2) and (4)

We get,

$$A + B = 60 \dots\dots (6)$$

Now to get the values of A and B , let us solve equation (5) and (6) simultaneously

Therefore by adding equation (5) and (6)

We get,

$$\begin{array}{r} A - B = 30 \\ + A + B = 60 \\ \hline 2A + 0 = 90 \end{array}$$

Therefore,

$$2A = 90$$

$$\Rightarrow A = \frac{90}{2}$$

$$\Rightarrow A = 45^\circ$$

Hence $A = 45^\circ$

Now by subtracting equation (5) from equation (6)

We get,

$$\begin{array}{r} A + B = 60 \\ - A - B = 30 \\ \hline (-) (+) (-) \\ 0 + 2B = 30 \end{array}$$

Therefore,

$$2B = 30$$

$$\Rightarrow B = \frac{30}{2}$$

$$\Rightarrow B = 15^\circ$$

Hence $B = 15^\circ$

Therefore the values of A and B are as follows

$$A = 45^\circ \text{ and } B = 15^\circ$$

***** END *****

