FAQ's

1. In a right angle triangle ABC tan A= $\frac{3}{4}$ find sinA and cosA

Answer:

We know that tan A= $\frac{\sin A}{CosA}$ and tan A= $\frac{adjacent}{opposite}=\frac{3}{4}$ so in a right angle triangle adjacent side=3 and opposite side=4.

So according to pythogorous theorem hypotenuse=5 so

sinA= $\frac{oppsiteside}{hypotenus}=\frac{4}{5}$ cosA= $\frac{adjacentside}{hypotnus}=\frac{3}{5}$

2. Calculate cos($\frac{\pi}{6}$)

Answer:

To calculate the value of the cosine $(\frac{\pi}{6})$ at 30˚, construct a 30˚-60˚-90˚ right angle i.e a triangle with sides

1. $\sqrt{3}$, and

2. Then cos $(\frac{\pi}{6})=\frac{\sqrt{3}}{2}$

3. Calculate tan -$(\frac{\pi}{6})$

Answer:

By definition tanθ= $\frac{\sin\theta}{\cos\theta}$ now tan -$(\frac{\pi}{6})$ = $\frac{\sin-(\frac{\pi}{6})}{\cos-(\frac{\pi}{6})}=\frac{-\sin(\frac{\pi}{6})}{\cos(\frac{\pi}{6})}$ To calculate the sine and cosine functions at θ=$(\frac{\pi}{6})$ (i.e 30˚) construct 30˚-60˚-

90˚ right triangle i.e a tiangle with sides 1.$\sqrt{3}$, and 2. Then cos ($\frac{\pi}{6}$) $= \frac{1}{2}$ and cos ($\frac{\pi}{6}$) $= \frac{\sqrt{3}}{2}$ which implies than tan -($\frac{\pi}{6}$) = $\frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}}$

4. Prove that $(\sin x+\cos x)^2=1+\sin 2x$

   Answer:

   $(\sin x+\cos x)^2=\sin 2x+2\sin x\cos x+\cos^2 x$

   $=1+2\sin x\cos x=1+\sin 2x$

5. Given $\sin^2 x+\cos^2 x=1$, prove that $1+\cot^2 x=\operatorname{cosec}^2 x$

   Answer:

$$Sin^2 x + Cos^2 x = 1$$

$$\frac{Sin^2 x + Cos^2 x}{Sin^2 x} = \frac{1}{Sin^2 x}$$

$$1 + \frac{Cos^2 x}{Sin^2 x} = \frac{1}{Sin^2 x}$$

$$1 + Cot^2 x = Co\sec^2 x$$