ALGEBRA

1. Two angles of a triangle are $\cot^{-1} 2$ and $\cot^{-1} 3$.The third angle of the triangle is _____

2. Prove that $2\tan^{-1}\frac{1}{2} + \tan^{-1}\frac{1}{7} = \tan^{-1}\frac{31}{17}$

3. Akbar invested ₹6060 in the shares of face value ₹100 each of a company.At the end of the year,the company declared dividend of 15 % which gave him an income of ₹600.At what price was the share quoted if the brokerage was 1% ?

4. $\sin[\frac{\pi}{3} - \sin^{-1}(\frac{-1}{2})]$ is equal to:

   (a) $\frac{1}{2}$
   (b) $\frac{1}{3}$
   (c) -1
   (d) 1

5. $\sin(\tan^{-1} x)$,where $|x| \leq 1$,is equal to:

   (a) $\frac{x}{\sqrt{1-x^2}}$
   (b) $\frac{1}{\sqrt{1-x^2}}$
   (c) $\frac{1}{\sqrt{1+x^2}}$
   (d) $\frac{x}{\sqrt{1+x^2}}$

6. Simplest form of $\tan^{-1}(\frac{\sqrt{1+\cos x}+\sqrt{1-\cos x}}{\sqrt{1+\cos x}-\sqrt{1-\cos x}}), \pi < x < \frac{3\pi}{2}$ is:

   (a) $\frac{\pi}{4} - \frac{x}{2}$
   (b) $\frac{3\pi}{2} - \frac{x}{2}$
   (c) $-\frac{x}{2}$
   (d) $\pi - \frac{x}{2}$