INVERSE TRIGONOMETRIC FUNCTION

(one /two marks)

1. Write the principal value of $\cos^{-1}(\cos 680^0)$
2. Find the value of $\sin^{-1}\{\cos(\left[\frac{33\pi}{5}\right]\}$
3. What is the other branch of $\sec^{-1} x$?
4. Write the value of $\tan(2\tan^{-1}(1/5))$.
5. If $\sin(\sin^{-1} 1/5 + \cos^{-1}x) = 1$,then find the value of x.
6. Write the principal value of: $tan^{-1}(tan\frac{3\pi}{4})$.
7. Write the principal value of: $sin^{-1}\left(-\frac{1}{2}\right) + cos^{-1}(-\frac{1}{2})$
8. Write the principal value of: $tan^{-1}\sqrt{3} - sec^{-1}(-2)$
9. Write the principal value of: $cos^{-1}\left(\frac{1}{2}\right) - 2sin^{-1}\left(-\frac{1}{2}\right)$.
10. Show that $sin^{-1}\left(2x\sqrt{1-x^2}\right) = 2\sin^{-1} x$.
11. Find the value of $\tan^{-1}(\tan\frac{9\pi}{8})$ [Ans : $\frac{\pi}{8}$]
12. Find the value of $\frac{cos\ (\sin^{-1} a + \cos^{-1} a)}{sin(\sec^{-1} b + \csc^{-1} b)}$ [Ans : 0]
13. Evaluate $\tan(\tan^{-1}(-4))$ [Ans : -4]
14. Evaluate : $\tan^{-1}\left(\sqrt{3}\right)$ - $\sec^{-1} -2$ [Ans : $\frac{-\pi}{3}$]

2 Marks question

1. Find the value of $\sin^{-1}(\sin\frac{3\pi}{5})$ [Ans : $\frac{2\pi}{5}$]
2. Evaluate : $\sin^{-1}\left[\cos\left(\sin^{-1}\frac{\sqrt{3}}{2}\right)\right]$ [Ans : $\frac{\pi}{6}$]
3. Find the value of $\sin\left[2\cot^{-1}\left(\frac{-5}{12}\right)\right]$ [Ans : $\frac{-120}{169}$]
4. Find the value of $\tan(\cos^{-1} x)$ and hence evaluate $\tan\left(\cos^{-1}\frac{8}{17}\right)$ [Ans : $\frac{15}{8}$]
5. Write in simplest form: $\tan^{-1}\left(\frac{x}{\sqrt{a^2-x^2}}\right)$, $|x| < a$
6. Evaluate :$sec^2(tan^{-1}2)$.
7. Prove that: $2\tan^{-1} x = \sin^{-1}\left(\frac{2x}{1+x^2}\right)$.
8. Prove that:$2tan^{-1}x = cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)$.
9. Write the principal value of a) $\cos^{-1}(\cos 5\pi/3)$ b) $\tan^{-1}\tan(\frac{9\pi}{8})$.
10. Find the domain of $\sin^{-1} 2x$.
11. Find the value of $\tan^{-1}[2\cos(2\sin^{-1} 1/2)]$.
12. Write the value of $\cot^{-1}(\frac{\pi}{4} - 2\cot^{-1} 3)$.
13. If $\sin(\sin^{-1}\frac{1}{5} + \cos^{-1} x) = 1$, then find the value of x .
14. Prove that $\tan(\frac{\pi}{4} + \frac{1}{2}\cos^{-1}\frac{a}{b}) + \tan(\frac{\pi}{4} - \frac{1}{2}\cos^{-1}\frac{a}{b}) = \frac{2b}{a}$
15. Solve for x, $\tan^{-1}(x+1) + \tan^{-1}(x-1) = 8/11$
16. Prove that $\sin^{-1}(12/13) + \cos^{-1}(4/5) + \tan^{-1}(63/16) = \pi$
17. Solve for x, $\tan^{-1}(\frac{x-1}{x-2}) + \tan^{-1}(\frac{x+1}{x+2}) = \pi/4$