Precalculus

Name: _____

Practice With Inverse Trig Functions

Find the exact value of the expression whenever it is defined.

1. a. $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ $-\pi/4$ b. $\cos^{-1}\left(-\frac{1}{2}\right)$ $2\pi/3$ c. $\tan^{-1}\left(-\sqrt{3}\right)$ $-\pi/3$

2. a. $\sin^{-1}\left(-\frac{1}{2}\right)$ b. $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$ c. $\tan^{-1}(-1)$

3. a. $\arcsin\frac{\sqrt{3}}{2}$ $\pi/3$ b. $\arccos\frac{\sqrt{2}}{2}$ $\pi/4$ c. $\arctan\frac{1}{\sqrt{3}}$ $\pi/6$

4. a. $\arcsin 0$ b. $\arccos(-1)$ c. $\arctan 0$

5. a. $\sin^{-1}\left(\frac{\pi}{3}\right)$ undef b. $\cos^{-1}\left(\frac{\pi}{2}\right)$ undef c. $\tan^{-1}(1)$ $\pi/4$

6. a. $\arcsin\left(\frac{\pi}{2}\right)$ b. $\arccos\left(\frac{\pi}{3}\right)$ c. $\arctan\left(-\frac{\sqrt{3}}{3}\right)$

7. a. $\sin\left[\arcsin\left(-\frac{3}{10}\right)\right]$ $-\frac{3}{10}$ b. $\cos\left[\arccos\frac{1}{2}\right]$ $\frac{1}{2}$ c. $\tan(\arctan 14)$ 14

8. a. $\sin\left(\sin^{-1}\frac{2}{3}\right)$ b. $\cos\left[\cos^{-1}\left(-\frac{1}{5}\right)\right]$ c. $\tan\left[\tan^{-1}(-9)\right]$

9. a. $\sin^{-1}\left(\sin\frac{\pi}{3}\right)$ $\pi/3$ b. $\cos^{-1}\left[\cos\left(\frac{5\pi}{6}\right)\right]$ $5\pi/6$ c. $\tan^{-1}\left[\tan\left(-\frac{\pi}{6}\right)\right]$ $-\pi/6$

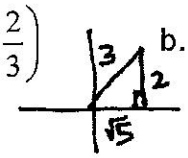
10. a. $\arcsin\left[\sin\left(-\frac{\pi}{2}\right)\right]$ b. $\arccos(\cos 0)$ c. $\arctan\left(\tan\frac{\pi}{4}\right)$

11. a. $\arcsin\left(\sin\frac{5\pi}{4}\right)$ $-\pi/4$ b. $\arccos\left(\cos\frac{5\pi}{4}\right)$ $3\pi/4$ c. $\arctan\left(\tan\frac{7\pi}{4}\right)$ $-\pi/4$

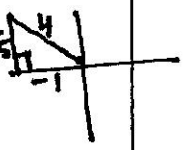
12. a. $\sin^{-1}\left(\sin\frac{2\pi}{3}\right)$ b. $\cos^{-1}\left(\cos\frac{4\pi}{3}\right)$ c. $\tan^{-1}\left(\tan\frac{7\pi}{6}\right)$

13. a. $\sin\left[\cos^{-1}\left(-\frac{1}{2}\right)\right]$ $\frac{\sqrt{3}}{2}$ b. $\cos\left(\tan^{-1}1\right)$ $\frac{\sqrt{2}}{2}$ c. $\tan\left[\sin^{-1}(-1)\right]$ undef

14. a. $\sin\left[\tan^{-1}\sqrt{3}\right]$ b. $\cos\left[\sin^{-1}1\right]$ c. $\tan\left(\cos^{-1}0\right)$

15. a. $\cot\left(\sin^{-1}\frac{2}{3}\right)$ $\frac{\sqrt{5}}{2}$ 

b. $\sec\left[\tan^{-1}\left(-\frac{3}{5}\right)\right]$ $\frac{\sqrt{34}}{5}$ 

c. $\csc\left[\cos^{-1}\left(-\frac{1}{4}\right)\right]$ $\frac{4\sqrt{15}}{15}$ 

16. a. $\cot\left[\sin^{-1}\left(-\frac{2}{5}\right)\right]$ b. $\sec\left[\tan^{-1}\left(\frac{7}{4}\right)\right]$ c. $\csc\left[\cos^{-1}\left(\frac{1}{5}\right)\right]$