Inverse Trig Functions

Evaluate.

1. $\sin^{-1}(0)$ 0

2. $\cos^{-1}0$ $\frac{\pi}{2}$

3. $\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)$ $\frac{\pi}{3}$

4. $\csc^{-1}(-2)$ $-\frac{\pi}{6}$

5. $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$ $\frac{5\pi}{6}$

6. $\cos^{-1}(1)$ 0

7. $\cos^{-1}\left(-\frac{1}{2}\right)$ $\frac{2\pi}{3}$

8. $\tan^{-1}(1)$ $\frac{\pi}{4}$

9. $\tan^{-1}(-1)$ $-\frac{\pi}{4}$

10. $\sin^{-1}\left(\frac{1}{2}\right)$ $\frac{\pi}{6}$

11. $\cos^{-1}(-1)$ π

12. $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$ $\frac{\pi}{6}$

13. $\cos(\cos^{-1}\left(\frac{\sqrt{2}}{2}\right))$ $\frac{\sqrt{2}}{2}$

$\cos\left(\frac{\pi}{4}\right)$

14. $\sin(\sin^{-1}(-\frac{\sqrt{3}}{2}))$ $-\frac{\sqrt{3}}{2}$

$\sin\left(-\frac{\pi}{3}\right)$

15 $\cos^{-1}\left(\cos\frac{\pi}{4}\right)$ $\frac{\pi}{4}$

$\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)$

16. $\sin^{-1}\left(\sin\frac{11\pi}{6}\right)$ $-\frac{\pi}{6}$

$\sin^{-1}\left(-\frac{1}{2}\right)$

17. $\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$ $\frac{5\pi}{6}$

$\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

18. $\sin^{-1}(\cos\frac{5\pi}{6})$ $-\frac{\pi}{3}$

$\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

19. $\cos^{-1}(\sin\frac{3\pi}{4})$ $\frac{\pi}{4}$

$\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)$

20. $\tan^{-1}(\tan\frac{3\pi}{4})$ $-\frac{\pi}{4}$

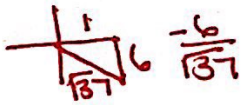
$\tan^{-1}(-1)$

21. $\cot\left(\tan^{-1}\left(\frac{1}{5}\right)\right)$ 5

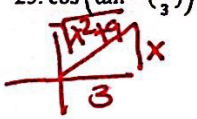
22. $\cos\left(\sin^{-1}\left(-\frac{2}{5}\right)\right)$ $\frac{\sqrt{21}}{5}$

23. $\sin\left(\cos^{-1}\left(-\frac{8}{9}\right)\right)$ $\frac{\sqrt{17}}{9}$

24. $\sin(\tan^{-1}(-6))$ $-\frac{6\sqrt{37}}{37}$



25. $\cos\left(\tan^{-1}\left(\frac{x}{3}\right)\right)$ $\frac{3}{\sqrt{x^2+9}}$



x^2+3^2

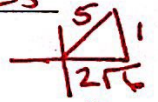
26. $\sin(\cot^{-1}(-x))$ $\frac{1}{\sqrt{x^2+1}}$

$(-x)^2+1^2=r^2$

27. $\cos\left(2\sin^{-1}\left(\frac{1}{5}\right)\right)$ $\frac{23}{25}$

$\cos^2x-\sin^2x$

$\left(\frac{2\sqrt{6}}{5}\right)^2-\left(\frac{1}{5}\right)^2$

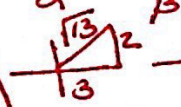


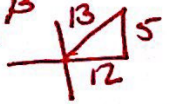
28. $\sin\left(2\cos^{-1}\left(\frac{4}{7}\right)\right)$ $\frac{8\sqrt{33}}{49}$

$2\sin x\cos x$

$2\left(\frac{\sqrt{33}}{7}\right)\left(\frac{4}{7}\right)$

29. $\sin\left(\tan^{-1}\left(\frac{2}{3}\right)-\sin^{-1}\left(\frac{5}{13}\right)\right)$ $\frac{9}{13\sqrt{13}}$





$\frac{24}{25}$ $-\frac{1}{25}$

$\sin\alpha\cos\beta-\cos\alpha\sin\beta$

$\left(\frac{2}{\sqrt{13}}\right)\left(\frac{12}{13}\right)-\left(\frac{3}{\sqrt{13}}\right)\left(\frac{5}{13}\right)$

$\frac{24}{13\sqrt{13}}-\frac{15}{13\sqrt{13}}$

30. $\cos\left(\sec^{-1}\left(-\frac{5}{3}\right)+\tan^{-1}\left(-\frac{2}{3}\right)\right)$ $\frac{-\sqrt{13}}{65}$

$\cos\alpha\cos\beta-\sin\alpha\sin\beta$

$\left(-\frac{3}{5}\right)\left(\frac{3}{\sqrt{13}}\right)-\left(\frac{4}{5}\right)\left(\frac{-2}{\sqrt{13}}\right)$

$-\frac{9}{5\sqrt{13}}-\frac{-8}{5\sqrt{13}}$

$\frac{-1}{5\sqrt{13}}$