REVIEW WS 7.4 **Name:** Key

Find the exact real number.

1. $\sin^{-1}\left(-\frac{\sqrt{2}}{2}\right) =$ $-\pi/4$

2. $\tan^{-1}\left(-\sqrt{3}\right) =$ $-\pi/3$

3. $\cot^{-1} 0 =$ $\pi/2$

4. $\sec^{-1} 2 =$ $\pi/3$

5. $\cot\left(\sec^{-1}\frac{5}{4}\right) =$ $4/3$

6. $\sin\left(\cos^{-1}\frac{1}{4}\right) =$ $\sqrt{15}/4$

7. $\sec\left[\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right] =$ 2

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

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

10. $\sec^{-1}\left(-\sqrt{2}\right)$ $3\pi/4$

Find the exact degree measure of θ.

11. $\theta = \sec^{-1}(-1)$ π

12 $\theta = \sec^{-1}\left(-\sqrt{2}\right)$ $3\pi/4$

13. $\theta = \sec^{-1}\left(\sec -100^{\circ}\right)$ 120°

14. $\theta = \cos^{-1}(\cos(30^{\circ}))$ 30°

Find the exact real number.

15. $\tan\left[\tan^{-1} 4 - \sec^{-1}\left(-\sqrt{3}\right)\right] =$ $\frac{12 + 17\sqrt{2}}{-31}$

16. $\cos\left(\frac{\cos^{-1}\frac{1}{4}}{2}\right) =$ $\frac{\sqrt{10}}{4}$

17. $\tan\left[2\sec^{-1}\left(-\sqrt{7}\right)\right] =$ $\frac{2\sqrt{6}}{5}$

18. $\sin\left[\cos^{-1}\frac{4}{5} - \tan^{-1} -\frac{7}{24}\right] =$ $4/5$

19. $\cos\left(arccos\frac{\sqrt{3}}{2} - arctan(-1)\right)$ $\frac{\sqrt{6} - \sqrt{2}}{4}$

20. $arc\cos\left(\sin\frac{2\pi}{3}\right)$. $\pi/6$

21. $\sin\left(arc\cos\left(-\frac{\sqrt{3}}{2}\right)+tan^{-1}(1)\right)$

$\frac{-\sqrt{6}+\sqrt{2}}{4}$

22. $\tan\left(arc\sin\frac{4}{5}+arc\cos\frac{4}{5}\right)$

$\frac{\frac{4}{3}+\frac{3}{4}}{1-\frac{4}{3}\cdot\frac{3}{4}}$ und.

23. $\sin\frac{1}{2}\left(arc\tan\left(-\frac{4}{3}\right)\right)$

$\sqrt{\frac{1-\frac{3}{5}}{2}}$ $\sqrt{\frac{\frac{2}{5}}{2}}$ $\sqrt{\frac{1}{5}}$ $\frac{\sqrt{5}}{5}$

24. $\cos\left[\frac{2\pi}{3}-\sin^{-1}(-1)\right]$

$7\pi/6$ $-\pi/2$

$-\sqrt{3}/2$

25. $\tan\left[arc\cos\frac{7}{25}+arc\sin\left(-\frac{4}{5}\right)\right]$

$\frac{\frac{24}{7}+\frac{-4}{3}}{1-\frac{24}{7}\cdot\frac{-4}{3}}=-\frac{3}{4}$

$\frac{44}{21}\cdot\frac{7}{39}=\frac{44}{117}$

26. State the domain and range of $y = Arc\sin x$.

D: $[-1, 1]$

R: $[-\pi/2, \pi/2]$

27. State the domain and range of $y = Arc\cos x$.

D: $[-1, 1]$

R: $[0, \pi]$

Sec⁻¹x

Note: D: $(-\infty, -1]\cup[1, \infty)$

R: $[0, \pi]$, $y \neq \pi/2$

28. State the domain and range of $y = \tan^{-1}x$.

D: $\mathbb{R}$

R: $(-\pi/2, \pi/2)$

29. State the domain and range of $y = \csc^{-1}x$.

D: $(-\infty, -1]\cup[1, \infty)$

R: $[-\pi/2, \pi/2]$, $y \neq 0$

30. State the domain and range of y = arccotx.

D: $\mathbb{R}$

R: $[0, \pi]$

PRE CALC WS 7.5 a Name: Key

Find all of the solutions to the following:

1. $15\sin x+19=14\sin x+18$

$x=\frac{3\pi}{2}+2\pi k,\ k\in\mathbb{Z}$

2. $5\cot x+12=6\cot x+13$

$x=\frac{3\pi}{4}+\pi k,\ k\in\mathbb{Z}$

3. $2\cos^2 x=1$

$x=\begin{cases}\pi/4+\pi k\\ 3\pi/4+\pi k\end{cases},\ k\in\mathbb{Z}$

4. $\csc^2 x=2$

$x=\begin{cases}\frac{\pi}{4}+\pi k\\ \frac{3\pi}{4}+\pi k\end{cases},\ k\in\mathbb{Z}$

5. $2\cos^2 x+3\cos x+1=0$

$x=\begin{cases}\frac{2\pi}{3}+2\pi k\\ \pi+2\pi k\\ 4\pi/3+2\pi k\end{cases},\ k\in\mathbb{Z}$

6. $\cot^2 x-\cot x=0$

$x=\begin{cases}\frac{\pi}{2}+\pi k\\ \pi/4+\pi k\end{cases},\ k\in\mathbb{Z}$

7. $\cos x=\sec x$

$x=\pi k,\ k\in\mathbb{Z}$

8. $4\sin^2 x-8\cos x+1=0$

$x=\begin{cases}\frac{\pi}{3}+2\pi k\\ \frac{5\pi}{3}+2\pi k\end{cases},\ k\in\mathbb{Z}$

9. $\cos 2x+3\cos x=-2$

$x=\begin{cases}\frac{2\pi}{3}+2\pi k\\ \pi+2\pi k\\ 4\pi/3+2\pi k\end{cases},\ k\in\mathbb{Z}$

10. $2\sin x-\sin 2x=0$

$x=\pi k,\ k\in\mathbb{Z}$

Find the exact solutions to each equation for the interval [0, 2pi].

11. $\sin^2 x+3\cos x=3$

$x=\{0,2\pi\}$

12. $2\cos^3 x+\cos^2 x-\cos x=0$

$x=\left\{\frac{\pi}{3},\frac{\pi}{2},\frac{3\pi}{2},\frac{5\pi}{3}\right\}$

13. $\cos^2 2x=\frac{1}{2}\cos 2x$

$x=\left\{\frac{\pi}{4},\frac{3\pi}{4},\frac{5\pi}{4},\frac{7\pi}{4},\frac{\pi}{6},\frac{5\pi}{6},\frac{7\pi}{6}\right\}$

14. $\frac{\sin x}{\sin x-1}=\frac{\sin^2 x}{\sin x+3}$

$x=\left\{0,\pi,\frac{3\pi}{2},2\pi\right\}$

15. $\sin 2x\cos x+\cos 2x\sin x=\frac{1}{2}$

$x=\left\{\frac{\pi}{18},\frac{5\pi}{18},\frac{13\pi}{18},\frac{17\pi}{18},\frac{25\pi}{18},\frac{29\pi}{18}\right\}$

16. $\cos 2x\cos x-\sin 2x\sin x=\frac{-\sqrt{3}}{2}$

$x=\left\{\frac{7\pi}{18},\frac{5\pi}{18},\frac{11\pi}{18},\frac{19\pi}{18},\frac{24\pi}{18},\frac{31\pi}{18}\right\}$