

Trig quiz. 11.18.09

Name _____

Key

For probs 1 – 5 give the exact value:

1. $\sin\left(\frac{23\pi}{4}\right) = \underline{-\frac{\sqrt{2}}{2}}$

4. $\tan\left(\frac{-11\pi}{4}\right) = \underline{1}$

2 pts each
20

2. $\cos\left(\frac{20\pi}{3}\right) = \underline{-\frac{1}{2}}$

5. $\sin^{-1}\left(\frac{-\sqrt{2}}{2}\right) = \underline{-45^\circ}$

3. $\cos^{-1}\left(\frac{-\sqrt{2}}{2}\right) = \underline{135^\circ}$

Prove these identities:

6. $\cos(x) + \sin(x)\tan(x) = \sec(x)$

$$\begin{aligned} \cos(x) + \frac{\sin(x)\tan(x)}{\cos(x)} &= \\ \frac{\cos^2(x) + \sin^2(x)}{\cos(x)} &= \\ \frac{1}{\cos(x)} &= \\ \sec(x) &= \end{aligned}$$

7. $\frac{1}{\sin(x)+1} + \frac{1}{\csc(x)+1} = 1$

$$\begin{aligned} \frac{1}{\sin(x)+1} + \frac{1}{\frac{1}{\sin(x)}+1} &= \\ \frac{1}{\sin(x)+1} + \frac{1}{\frac{1+\sin(x)}{\sin(x)}} &= \\ \frac{1}{\sin(x)+1} + \frac{\sin(x)}{1+\sin(x)} &= \\ \frac{1+\sin(x)}{1+\sin(x)} &= \\ 1 &= 1 \end{aligned}$$

Solve the equations over the specified intervals:

$0 \leq x \leq 2\pi$

8. $2\cos(x)+1=0$

$\cos(x) = -\frac{1}{2}$

$120^\circ, 240^\circ$

$0 \leq x \leq 2\pi$

9. $2\sin(x)+\csc(x)=0$

$2\sin(x) + \frac{1}{\sin(x)} = 0$

$\frac{2\sin^2(x)+1}{\sin(x)} = 0$

$2\sin^2(x)+1=0$

$2\sin^2(x)=-1$

$\sin^2(x) = -\frac{1}{2}$

\emptyset

$0 \leq x \leq 2\pi$

10. $2\cos^2(x)+\cos(x)-1=0$

$2A^2 + A - 1 = 0$

$(2A-1)(A+1) = 0$

$A = \frac{1}{2}$

$A = -1$

$\cos(x) = \frac{1}{2}$

$\cos(x) = -1$
 180°

$60^\circ, 300^\circ$

