Accel. Precalculus Name_____

Sum & Diff Identities Practice

Date_____ Period____

Find the exact value of each. For the first four, condense first.

1) $\cos 126\cos 9 - \sin 126\sin 9$

2) $\sin \frac{5\pi}{9}\cos \frac{2\pi}{9} - \cos \frac{5\pi}{9}\sin \frac{2\pi}{9}$

3) $\dfrac{\tan \frac{16\pi}{9} - \tan \frac{19\pi}{36}}{1 + \tan \frac{16\pi}{9}\tan \frac{19\pi}{36}}$

4) $\sin 220\cos 85 - \cos 220\sin 85$

5) $\tan \frac{7\pi}{12}$

6) $\cos \frac{19\pi}{12}$

7) $\cos 75$

8) $\tan 105$

Simplify/Condense.

9) $\cos 5x\cos -6x - \sin 5x\sin -6x$

10) $\cos -2v\cos -2v - \sin -2v\sin -2v$

11) $\dfrac{\tan -2v - \tan -3v}{1 + \tan -2v\tan -3v}$

12) $\cos 2x\cos -3x + \sin 2x\sin -3x$

Verify each identity.

13) $\sin(180 - \theta) = \sin\theta$

14) $\cos\left(\dfrac{\pi}{2} + \theta\right) = -\sin\theta$

15) $\sin\left(\theta - \dfrac{3\pi}{2}\right) = \cos\theta$

16) $\tan\left(\dfrac{\pi}{4} - \theta\right) = \dfrac{1 - \tan\theta}{1 + \tan\theta}$

Answers to Sum & Diff Identities Practice

1) $-\frac{\sqrt{2}}{2}$

2) $\frac{\sqrt{3}}{2}$

3) 1

4) $\frac{\sqrt{2}}{2}$

5) $-2-\sqrt{3}$

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

7) $\frac{\sqrt{6}-\sqrt{2}}{4}$

8) $-2-\sqrt{3}$

9) $\cos -x$

10) $\cos -4v$

11) $\tan v$

12) $\cos 5x$

13) $\sin(180-\theta)$
$= \sin 180\cos\theta - \cos 180\sin\theta$
$= 0\cos\theta - -\sin\theta$
$= \sin\theta$

14) $\cos\left(\frac{\pi}{2}+\theta\right)$
$= \cos\frac{\pi}{2}\cos\theta - \sin\frac{\pi}{2}\sin\theta$
$= 0\cos\theta - \sin\theta$
$= -\sin\theta$

15) $\sin\left(\theta-\frac{3\pi}{2}\right)$
$= \sin\theta\cos\frac{3\pi}{2} - \cos\theta\sin\frac{3\pi}{2}$
$= \sin\theta\cdot 0 - \cos\theta\cdot -1$
$= \cos\theta$

16) $\tan\left(\frac{\pi}{4}-\theta\right)$
$= \frac{\tan\frac{\pi}{4}-\tan\theta}{1+\tan\frac{\pi}{4}\tan\theta}$
$= \frac{1-\tan\theta}{1+\tan\theta}$
$= \frac{1-\tan\theta}{1+\tan\theta}$