Accel. Precalculus Name_____



# Sum/Diff Identities Practice

Date_____ Period____

**Simplify.**

1) $\sin 6u\cos -u + \cos 6u\sin -u$

2) $\dfrac{\tan 4v + \tan 3v}{1 - \tan 4v\tan 3v}$

3) $\sin 6x\cos 5x + \cos 6x\sin 5x$

4) $\cos \theta\cos -3\theta - \sin \theta\sin -3\theta$

5) $\sin -2\theta\cos -6\theta + \cos -2\theta\sin -6\theta$

6) $\sin 5\theta\cos 3\theta - \cos 5\theta\sin 3\theta$

7) $\sin -3u\cos 5u + \cos -3u\sin 5u$

8) $\cos -2\theta\cos -4\theta + \sin -2\theta\sin -4\theta$

**Verify each identity.**

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

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

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

12) $\sin(\theta + \pi) = -\sin \theta$

13) $\tan(\theta + 180) = \tan \theta$

14) $\sin(90 + \theta) = \cos \theta$

# Answers to Sum/Diff Identities Practice

1) $\sin 5u$

2) $\tan 7v$

3) $\sin 11x$

4) $\cos -2\theta$

5) $\sin -8\theta$

6) $\sin 2\theta$

7) $\sin 2u$

8) $\cos 2\theta$

9) $\cos\left(\frac{\pi}{2} + \theta\right)$

$= \cos\frac{\pi}{2}\cos\theta - \sin\frac{\pi}{2}\sin\theta$

$= 0\cos\theta - \sin\theta$

$= -\sin\theta$

10) $\cos\left(\theta - \frac{3\pi}{2}\right)$

$= \cos\theta\cos\frac{3\pi}{2} + \sin\theta\sin\frac{3\pi}{2}$

$= \cos\theta \cdot 0 + \sin\theta \cdot -1$

$= -\sin\theta$

11) $\tan\left(\frac{\pi}{4} + \theta\right)$

$= \frac{\tan\frac{\pi}{4} + \tan\theta}{1 - \tan\frac{\pi}{4}\tan\theta}$

$= \frac{1 + \tan\theta}{1 - \tan\theta}$

$= \frac{1 + \tan\theta}{1 - \tan\theta}$

12) $\sin(\theta + \pi)$

$= \sin\theta\cos\pi + \cos\theta\sin\pi$

$= \sin\theta \cdot -1 + \cos\theta \cdot 0$

$= -\sin\theta$

13) $\tan(\theta + 180)$

$= \frac{\tan\theta + \tan 180}{1 - \tan\theta\tan 180}$

$= \frac{\tan\theta + 0}{1 - \tan\theta \cdot 0}$

$= \tan\theta$

14) $\sin(90 + \theta)$

$= \sin 90\cos\theta + \cos 90\sin\theta$

$= \cos\theta + 0\sin\theta$

$= \cos\theta$