Name____ Date_______________________ Period______

Worksheet 6.3—Composite Identities

Show all work. No Calculator, or course (unless you use the side of it as a straight-edge to draw your line down the equal sign.)

I. Multiple Choice

1. If $\cos A \cos B = \sin A \sin B$, then $\cos(A+B) =$

(A) 0 (B) 1 (C) $\cos A + \cos B$ (D) $\cos B - \cos A$ (E) $\cos A \cos B + \sin A \sin B$

2. If $\sin A \cos B = -\sin B \cos A$, then $\sin(A+B) =$

(A) 0 (B) 1 (C) $\cos A + \sin B$ (D) $\sin B - \cos A$ (E) $2\sin A \cos B$

3. The function $f(x) = \sin x \cos 2x + \cos x \sin 2x$ has how many cycles from 0 to 2π?

(A) 1 (B) 2 (C) $\frac{2\pi}{3}$ (D) 3 (E) 6

4. $\sin\left(-\dfrac{\pi}{12}\right) =$

(A) -0.25 (B) $-\dfrac{\sqrt{3}}{4}$ (C) $-\dfrac{\sqrt{3}+\sqrt{2}}{4}$ (D) $\dfrac{\sqrt{2}-\sqrt{6}}{4}$ (E) $\dfrac{\sqrt{6}-\sqrt{2}}{4}$

5. $\sin 133^\circ \cos 58^\circ + \cos 133^\circ \sin 58^\circ =$

(A) $\cos 75^\circ$ (B) $\sin 191^\circ$ (C) $\sin 75^\circ$ (D) $\cos 191^\circ$ (E) Peaches

II. Short answer

6. Find the exact value of each of the following using composite identities.

(a) $\sin\dfrac{5\pi}{12}$ (b) $\cos\dfrac{7\pi}{12}$ (c) $\tan\dfrac{11\pi}{12}$

7. Write each expression as the sine, cosine, or tangent of a **positive** angle.

(a) $\sin\frac{2\pi}{13}\cos\frac{3\pi}{4}-\sin\frac{3\pi}{4}\cos\frac{2\pi}{13}=$

(b) $\dfrac{\tan\frac{\pi}{5}-\tan\frac{\pi}{3}}{1+\tan\frac{\pi}{5}\tan\frac{\pi}{3}}$

8. Express each function as a sinusoid in standard transformation form.

(a) $f(x)=\sin 3x\cos 2-\cos 3x\sin 2$

(b) $g(x)=2\cos 2\cos 2x+2\sin 2\sin 2x-2$

9. Prove each of the following:

(a) $\cos\left(x-\frac{\pi}{4}\right)=\frac{\sqrt{2}}{2}(\cos x+\sin x)$

(b) $\cos(x-y)+\cos(x+y)=2\cos x\cos y$

(c) $\sin 2x=2\sin x\cos x$

(d) $\sin(3u)=3\cos^2 u\sin u-\sin^3 u$

(e) $\cos 3x + \cos x = 2\cos 2x \cos x$

(f) $\cos 2x = \cos^2 x - \sin^2 x$

10. Let $\theta = \arccos x$. Write $\sin(2\arccos x)$ as an algebraic function.