Name: Schlansky
Mr. Schlansky

Date _____
Algebra II

Double Angle Identities

$\sin 2A = 2\sin A\cos A$
$\cos 2A = \cos^2 A - \sin^2 A$
$\cos 2A = 2\cos^2 A - 1$
$\cos 2A = 1 - 2\sin^2 A$

$\sec A = \frac{1}{\cos A}$
$\csc A = \frac{1}{\sin A}$
$\tan A = \frac{\sin A}{\cos A}$
$\cot A = \frac{\cos A}{\sin A}$

1. The expression $\frac{\sin 2A}{2\cos A}$ is equivalent to

(1) $\cos A$ (2) $\tan A$ (3) $\sin A$ (4) $\frac{1}{2}\sin A$

$\frac{2\sin A\cos A}{2\cos A} = \sin A$

2. The expression $\frac{2\sin A}{\sin 2A}$ is equivalent to:

(1) tan A (2) sec A (3) 1 (4) -1

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

$\sec A$

3. The expression $\frac{\sin 2\theta}{\sin^2 \theta}$ is equivalent to

(1) $\frac{2}{\sin\theta}$ (3) $2\cot\theta$

(2) $2\cos\theta$ (4) $2\tan\theta$

$\frac{2\sin\theta\cos\theta}{\sin^2\theta} = 2\frac{\cos\theta}{\sin\theta} = 2\cot\theta$

4. The expression $\frac{2\sin 2A}{2\cos^2 A}$ is equivalent to:

(1) 2csc A (2) 2tan A (3) 1 (4) -1

$\frac{2(2\sin A\cos A)}{2\cos^2 A} = 2\frac{\sin A}{\cos A} = 2\tan A$

5. The expression $\frac{4\cos A}{\sin 2A}$ is equivalent to:

(1) 2sin A (2) 2csc A (3) 4tan A (4) $\frac{2}{\cos A}$

$\frac{2 \cdot 2\cos A}{2\sin A\cos A}$ $2 \cdot \frac{1}{\sin A}$

$2\csc A$

6. The expression $\cos^2\theta - \cos 2\theta$ is equivalent to

(1) $\sin^2\theta$ (2) $-\sin^2\theta$ (3) $\cos^2\theta + 1$ (4) $-\cos^2\theta - 1$

since $\cos 2\theta$ is involved, use the identity with $\cos 2\theta$

$\cos^2\theta - (2\cos^2\theta - 1)$

$\cos^2\theta - 2\cos^2\theta + 1$

$1 - \cos^2\theta = \sin^2\theta$

or $\cos^2\theta - (\cos^2\theta - \sin^2\theta)$

$\cos^2\theta - \cos^2\theta + \sin^2\theta$

$\sin^2\theta$

7. The expression $\frac{1+\cos 2A}{\sin 2A}$ is equivalent to

to cancel the 1, use the one with −1

1) $\cot A$
2) $\tan A$
3) $\sec A$
4) $1 + \cot 2A$

$\frac{1+2\cos^2 A - 1}{2\sin A\cos A}$

$\frac{\cos^2 A}{\sin A\cos A} = \frac{\cos A}{\sin A}$

$\cot A$

8. The expression $\frac{\cos 2A}{\sin^2 A - \cos^2 A}$ is equivalent to:

(1) tan A (2) sec A (3) 1 (4) -1

$\frac{\cos^2 A - \sin^2 A}{\sin^2 A - \cos^2 A}$

-1