

Name: _____

Half Angle and Power Reducing Formulas

1) Simplify each of the following expressions, showing every step of your argument:

1) $2 \sin 3x \cos 3x \cos 5x - (\cos^2 3x - \sin^2 3x) \sin 5x$

2) $\sin x \sec x - \sin^2 x \frac{\tan x}{\sin 2x}$

2) Solve each equation for exact solutions over the interval $[0, 2\pi)$

1) $\sin 2x = 2 \cos^2 x$

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

3) $2 \sin x = 2 \cos 2x$

4) $1 - \sin \theta = \cos 2\theta$

5) $\sin 2\theta = 2 \cos^2 \theta$

6) $\cos \theta - 1 = \cos 2\theta$

7) $\sin x - \sin 2x = 0$

8) $2 - \sin 2x = 4 \sin 2x$

9) $4 \cos 2x = 8 \sin x \cos x$

10) $\csc^2 \frac{x}{2} = 2 \sec x$