PRE-CALC Unit 4
WS-6

1) Expand $\sin 180°$: $\sin 2A = 2\sin A\cos A$

$\sin 180 (2\cdot 90) = 2\sin 90 \cos 90$

2) Expand $\cos(\frac{\pi}{3})$: $\cos 2A = 1 - 2\sin^2 A$

$\cos(\frac{\pi}{3}) = 1 - 2\sin^2(\pi/6)$

$\frac{1}{2} \cdot 2A = \frac{\pi}{3} \cdot \frac{1}{2}$

$A = \pi/6$

3) Expand $\cos 16x$: $\cos 2A = \cos^2 A - \sin^2 A$

$\cos 16x (2\cdot 8x) = \cos^2 8x - \sin^2 8x$

4) Expand $\cos \pi/2$ using $\cos 2A = 2\cos^2 A - 1$

$\cos \frac{\pi}{2} (2\cdot \frac{\pi}{4}) = 2\cos^2\frac{\pi}{4} - 1$

5) Condense : $2\cos^2(\frac{2\pi}{3}) - 1$

$A = \frac{2\pi}{3}$

$2A = \frac{4\pi}{3}$

$\cos 4\pi/3 =$

6) Condense: $\cos^2\frac{\pi}{6} - \sin^2\frac{\pi}{6}$

$\cos \pi/3$

7) Condense: $\cos^2\frac{1}{2}x - \sin^2\frac{1}{2}x$

$\cos x$

PROVE.

8) $\cos 2x + \cos x = (2\cos x - 1)(\cos x + 1)$

$2\cos^2 x - 1 + \cos x = (\quad)(\quad)$

$2\cos^2 x + \cos x - 1 =$

$(2\cos x - 1)(\cos x + 1) = (\quad)(\quad)$

9) $2\cos 2x - \sin x + 1 = -(4\sin x - 3)(\sin x + 1)$

$2(1 - 2\sin^2 x) - \sin x + 1 = -(\quad)(\quad)$

$2 - 4\sin^2 x - \sin x + 1 = -(\quad)(\quad)$

$-4\sin^2 x - \sin x + 3$

$-(4\sin^2 x + \sin x - 3)$

$-(4\sin x - 3)(\sin x + 1) = -(\quad)(\quad)$

10) $\frac{1 + \cos 2x}{\sin 2x} = \cot x$

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

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

$\cot x = \cot x$

11) $\frac{2}{1 + \cos 2x} = \sec^2 x$

$\frac{2}{1 + 2\cos^2 x - 1} = \sec^2 x$

$\frac{\cancel{2}}{\cancel{2}\cos^2 x} =$

$\sec^2 x = \sec^2 x$

12) $\cos 2x - 1 + 2\sin x = 2\sin x(1 - \sin x)$

$1 - 2\sin^2 x - 1 + 2\sin x =$

$2\sin x - 2\sin^2 x =$

$2\sin x(1 - \sin x) = 2\sin x(1 - \sin x)$

13) $(\sin x + \cos x)^2 = 1 + \sin 2x$

$\sin^2 x + 2\sin x\cos x + \cos^2 x =$

$1 + 2\sin x\cos x =$

$1 + \sin 2x = 1 + \sin 2x$