W3 – 4.5 Double Angle Formulas
MHF4U

1) Express each of the following as a single trig ratio.

a) $2\sin(5x)\cos(5x)$ **b)** $\cos^2\theta - \sin^2\theta$ **c)** $1 - 2\sin^2(3x)$

d) $\frac{2\tan(4x)}{1-\tan^2(4x)}$ **e)** $4\sin\theta\cos\theta$ **f)** $2\cos^2\frac{\theta}{2} - 1$

2) Express each of the following as a single trig ratio and then evaluate

a) $2\sin 45°\cos 45°$ **b)** $\cos^2 30° - \sin^2 30°$ **c)** $2\sin\frac{\pi}{12}\cos\frac{\pi}{12}$

d) $\cos^2\frac{\pi}{12} - \sin^2\frac{\pi}{12}$ **e)** $1 - 2\sin^2\frac{3\pi}{8}$ **f)** $2\tan 60°\cos^2 60°$

3) Use a double angle formula to rewrite each trig ratio

a) $\sin(4\theta)$ **b)** $\cos(3x)$ **c)** $\tan x$

d) $\cos(6\theta)$ **e)** $\sin x$ **f)** $\tan(5\theta)$

4) Determine the values of $\sin 2\theta$, $\cos 2\theta$, and $\tan 2\theta$, given $\cos\theta = \frac{3}{5}$ and $0 \leq \theta \leq \frac{\pi}{2}$

5) Determine the values of $\sin 2\theta$, $\cos 2\theta$, and $\tan 2\theta$, given $\tan\theta = -\frac{7}{24}$ and $\frac{\pi}{2} \leq \theta \leq \pi$

6) Determine the values of $\sin 2\theta$, $\cos 2\theta$, and $\tan 2\theta$, given $\sin\theta = -\frac{12}{13}$ and $\frac{3\pi}{2} \leq \theta \leq 2\pi$

7) Determine the values of $\sin 2\theta$, $\cos 2\theta$, and $\tan 2\theta$, given $\cos\theta = -\frac{4}{5}$ and $\frac{\pi}{2} \leq \theta \leq \pi$

8) Determine the value of a in the equation $2\tan x - \tan(2x) + 2a = 1 - \tan(2x)\tan^2 x$