5.4 Notes: Double Angle Formulas

Double Angle Identities

$\sin 2u = 2\sin u \cos u$

$\cos 2u = \cos^2 u - \sin^2 u$

$= 1 - 2\sin^2 u$

$= 2\cos^2 u - 1$

$\tan 2u = \dfrac{2\tan u}{1 - \tan^2 u}$

NOTE: $\sin^2 u \neq \sin 2u$ $\cos^2 u \neq \cos 2u$ $\tan^2 u \neq \tan 2u$

Ex: 1 Solve **a.)** $2\cos x + \sin 2x = 0$ **b.)** $3\sin^2 x + \cos 2x - 2 = 0$

You Try: **Solve** $\cos 2x + \cos x = 0$

Ex: 2 **Given** $\cos\theta = \frac{5}{13}$, and $\frac{3\pi}{2} < \theta < 2\pi$ **find** $\sin 2\theta$, $\cos 2\theta$, $\tan 2\theta$.

You Try: **Given** $\tan u = \frac{8}{15}$, and $\pi < u < \frac{3\pi}{2}$, **find** $\sin 2\theta$, $\cos 2\theta$, $\tan 2\theta$.