7.4 Double and Half Angle Identities

Double Angle Formulas	Half Angle formulas
$\sin 2\Theta = 2\sin\Theta\cos\Theta$	$\sin(\Theta/2) = \pm\sqrt{\frac{1-\cos\theta}{2}}$
$\cos 2\Theta = \cos^2\Theta - \sin^2\Theta$	$\cos(\Theta/2) = \pm\sqrt{\frac{1+\cos\theta}{2}}$
$\cos 2\Theta = 2\cos^2\Theta - 1$	$\tan(\Theta/2) = \pm\sqrt{\frac{1-\cos\theta}{1+\cos\theta}}, \cos\theta \neq -1$
$\cos 2\Theta = 1 - 2\sin^2\Theta$	
$\tan 2\Theta = \frac{2\tan\theta}{1-\tan^2\theta}$	

Example 1: If $\sin\Theta = (1/4)$ and Θ has its terminal side in the first quadrant, find the exact value of $\sin 2\Theta$.

Example 2: Use a half-angle identity to find the exact value of $\sin(\pi/12)$.