2.4.16
7.4
L 12
Double and Half Angle Identities

Double-Angle Identities	If θ represents the measure of an angle, then the following identities hold for all values of θ. $\sin 2\theta = 2 \sin\theta \cos\theta$ $\cos 2\theta = \cos^2\theta - \sin^2\theta$ $\cos 2\theta = 2\cos^2\theta - 1$ $\cos 2\theta = 1 - 2\sin^2\theta$ $\tan 2\theta = \frac{2\tan\theta}{1 - \tan^2\theta}$

I Try:

If $sin\theta = \frac{2}{3}$ in Q1 solve for $sin2\theta$

Choose identity to use	$sin2\theta = 2sin\theta cos\theta$
Solve for missing parts	Missing cos θ. $cos\theta =$
Plug into formula	
Check signs	

We Try:

If $sin\theta = \frac{2}{3}$ in Q1 solve for $cos2\theta$

Choose identity to use	
Solve for missing parts	
Plug into formula	
Check signs	

We Try:

If $sin\theta = \frac{2}{3}$ in Q1 solve for $\tan 2\theta$

Choose identity to use	
Solve for missing parts	
Plug into formula	
Check signs	

You Try:

If $tan\theta = \frac{4}{5}$ in Q1 solve for $\sin 2\theta$,$\cos 2\theta$, and $\tan 2\theta$,

Half-Angle Identities	If α represents the measure of an angle, then the following identities hold for all values of α. $\sin\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{2}}$ $\cos\frac{\alpha}{2} = \pm\sqrt{\frac{1+\cos\alpha}{2}}$ $\tan\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}}$, $\cos\alpha \neq -1$

I Try:

Use the half-angle identity to find the exact value.

$$\sin\frac{7\pi}{12}$$

Split the angle	$\sin\frac{7\pi}{12} = \sin\frac{\frac{7\pi}{6}}{2}$
Plug into formula	$\sqrt{\frac{1-\cos\frac{7\pi}{6}}{2}}$
Simplify	$\sqrt{\frac{1-\frac{-\sqrt{3}}{2}}{2}}$ $\sqrt{\frac{1+\frac{\sqrt{3}}{2}}{2}}$ $\sqrt{\frac{\frac{2}{2}+\frac{\sqrt{3}}{2}}{2}}$ $\sqrt{\frac{2+\sqrt{3}}{4}}$ $\frac{\sqrt{2+\sqrt{3}}}{2}$

We Try:
Solve using the half angle identity $cos67.5$

Split the angle	
Plug into formula	
Simplify	

You Try:

$tan\ 15$

Split the angle	
Plug into formula	
Simplify	

Exit Slip:

1) Solve using the half angle identity $tan15°$
2) If $sin\theta = \frac{2}{3}$ in Q1 solve for $cos2\theta$.