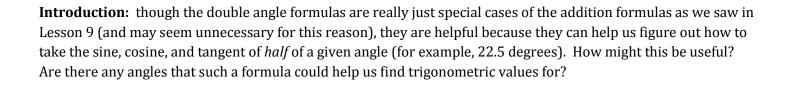
Trigonometry Lesson 10: The Double and Half Angle Formulas textbook section 8.3



1: Using any identities that we have proven to this point, prove that another valid formula for $\cos 2\theta$ is $2\cos^2\theta - 1$. Use this formula to find $\cos\frac{\pi}{8}$.

2: Use a method similar to how you found $\cos \frac{\pi}{8}$ to find a general formula for $\cos \frac{\theta}{2}$.

3: From the above formula for $\cos\frac{\theta}{2}$, find a formula for $\sin\frac{\theta}{2}$. (Hint: think of an identity that we regularly use to "switch" between sine and cosine.)

4: Evaluate the following (using the half-angle formulas):

$$\sin\frac{\pi}{8}$$

$$\tan \frac{\pi}{8}$$

$$\csc \frac{5\pi}{8}$$

$$\sec \frac{11\pi}{12}$$

5: Given that $\sin \theta = -\frac{4}{5}$ and $\frac{3\pi}{2} \le \theta < 2\pi$, find $\sin \frac{\theta}{2}$, $\cos \frac{\theta}{2}$, $\tan \frac{\theta}{2}$.

