

## Double Angle Formulas

Write a simplified formula for the following:

$$\sin(a+a)$$

$$\cos(a+a)$$

$$\tan(a+a)$$

### ***Example #1***

Prove that  $\cos \frac{\pi}{2} = 0$ , using a compound angle formula. Prove again using a double angle formula.

### ***Example #2***

Simplify and then evaluate, with an exact trig ratio,  $\sin 78^\circ \cos 18^\circ - \cos 78^\circ \sin 18^\circ$ . Evaluate again using a double angle formula.

### ***Example #3***

Evaluate, with an exact trig ratio,  $\tan \frac{2\pi}{3}$  using a compound angle formula and a double angle formula.

### ***Example #4***

Given  $\sin x = \frac{-5}{6}$  and that  $\frac{3\pi}{2} \leq x \leq 2\pi$ , find the exact value of  $\sin 2x$  and  $\cos 2x$ .

Find the measure of  $\angle x$  and  $\angle 2x$ .