

## PC 5-3 Part A

**Sum Formulas**

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

$$\cos(A + B) = \cos A \cos B - \sin A \sin B$$

$$\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

**Difference Formulas**

$$\sin(A - B) = \sin A \cos B - \cos A \sin B$$

$$\cos(A - B) = \cos A \cos B + \sin A \sin B$$

$$\tan(A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$$

Use the sum/difference formulas to find each of the following. Do not use a calculator.

1)  $\sin \frac{5\pi}{12}$

2)  $\sin \frac{\pi}{12}$

3)  $\cos \frac{7\pi}{12}$

4)  $\tan \frac{7\pi}{12}$

5)  $\sin \frac{17\pi}{12}$

6)  $\cos \frac{19\pi}{12}$

$$7) \sec\left(-\frac{\pi}{12}\right)$$

$$8) \cot\left(-\frac{5\pi}{12}\right)$$

Think backwards for these problems: It's still using the sum and difference formulas, but in reverse.

$$9) \sin\frac{\pi}{12}\cos\frac{7\pi}{12} - \cos\frac{\pi}{12}\sin\frac{7\pi}{12}$$

$$10) \cos\frac{5\pi}{12}\cos\frac{7\pi}{12} - \sin\frac{5\pi}{12}\sin\frac{7\pi}{12}$$

$$11) \sin\frac{\pi}{12}\cos\frac{5\pi}{12} - \sin\frac{5\pi}{12}\cos\frac{\pi}{12}$$

$$12) \sin\frac{\pi}{18}\cos\frac{5\pi}{18} + \cos\frac{\pi}{18}\sin\frac{5\pi}{18}$$