

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

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

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

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

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

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

Advanced Algebra

Unit 10: Advanced Trig Assignment #25 Sum and Difference Formulas Day #2

Expand and simplify the following:

1) $\sin(270^\circ + \theta)$

2) $\sin(90^\circ + \theta)$

3) $\cos(\pi + \theta)$

4) $\sin(2\pi - A)$

5) $\cos\left(\frac{3\pi}{2} - \theta\right)$

6) $\tan\left(\frac{\pi}{4} + \theta\right)$

7) $\tan\left(\theta - \frac{3\pi}{4}\right)$

8) $\tan(\pi + \theta)$

Simplify using the sum and difference formulas in reverse

1) $\cos(2\theta)\cos(\theta) + \sin(2\theta)\sin(\theta)$

2) $\sin 2A \cos A + \cos 2A \sin A$

$$3) \cos A \sin B - \sin A \cos B$$

$$4) \sin A \sin B + \cos A \cos B$$

$$5) \sin A \sin B - \cos A \cos B$$

$$6) 2 \sin A \cos B - 2 \cos A \sin B$$

$$7) \frac{\tan 2A - \tan A}{1 + \tan 2A \tan A}$$

$$8) \frac{\tan 2A + \tan A}{1 - \tan 2A \tan A}$$

Proofs:

Use the compound angle formula to prove the double angle formula

$$1) \sin 2\theta = 2 \sin \theta \cos \theta$$

$$2) \cos 2\theta = \cos^2 \theta - \sin^2 \theta$$

$$3) \tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$