Sum and Difference Angle Identities

Sum Identities
$\sin(A + B) = \sin A \cos B + \cos A \sin B$
$\cos(A + B) = \cos A \cos B - \sin A \sin B$
$\tan(A + B) = \dfrac{\tan A + \tan B}{1 - \tan A \tan B}$

Difference Identities
$\sin(A - B) = \sin A \cos B - \cos A \sin B$
$\cos(A - B) = \cos A \cos B + \sin A \sin B$
$\tan(A - B) = \dfrac{\tan A - \tan B}{1 + \tan A \tan B}$

Example #1:

Find the exact value of cos 15°.

Example #2:

Find the exact value of $tan\left(\dfrac{11\pi}{12}\right)$.

<u>You try:</u> **Find the exact value of tan 105°.**

<u>You try:</u> **Find the exact value of $\sin\left(\dfrac{7\pi}{12}\right)$.**

<u>Example #3:</u>

Prove the identity: $\cos\left(x + \dfrac{\pi}{2}\right) = -sinx$.

<u>Example #4:</u>

Prove the identity $\tan\left(\theta + \dfrac{\pi}{4}\right) = \dfrac{1 + \tan\theta}{1 - \tan\theta}$.

<u>You try:</u> **Prove:** $-cosx = cos(x + \pi)$