§5.4 Sum and Difference Formulas

REMEMBER YOU KNOW ALGEBRA !

Sum or Difference of Two Angles Identities
$\cos(\alpha - \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta$
$\cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta$
$\sin(\alpha - \beta) = \sin \alpha \cos \beta - \cos \alpha \sin \beta$
$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \cos \alpha \sin \beta$
$\tan(\alpha + \beta) = \dfrac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}$
$\tan(\alpha - \beta) = \dfrac{\tan \alpha - \tan \beta}{1 + \tan \alpha \tan \beta}$

Cofunction Identities		
$\sin(90° - \theta) = \cos \theta$	$\csc(90° - \theta) = \sec \theta$	$\tan(90° - \theta) = \cot \theta$
$\cos(90° - \theta) = \sin \theta$	$\sec(90° - \theta) = \csc \theta$	$\cot(90° - \theta) = \tan \theta$

Example 1   Find the exact value.

$\cos 75°$

Example 2   Find the exact value.

$\sin \dfrac{}{12}$

Example 3   Find the exact value.

$\sin 42° \cos 12° - \cos 42° \sin 12°$

Example 4   Prove a Cofunction

$\cos \dfrac{}{2} - x$

Example 5   Simplify.

$\tan(+ 3)$

Example 6   Given $\cos \alpha = \frac{8}{17}$, α in quadrant IV, and $\sin \beta = -\frac{24}{25}$, in quadrant III, find

$\cos(\alpha + \beta)$

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