

What we did with cosine can also be done with sine and tangent.

Sum and Difference of Sine

$$\sin(\alpha + \beta) =$$

$$\sin(\alpha - \beta) =$$

$$\sin(\alpha \pm \beta) =$$

Mnemonic Device:

Examples:

1. Find the exact value of $\sin 75^\circ$.

Sum and Difference of Tangent

$$\tan(\alpha + \beta) =$$

$$\tan(\alpha - \beta) =$$

$$\tan(\alpha \pm \beta) =$$

Mnemonic Device:

2. Find the exact value of $\tan \frac{5\pi}{12}$.

Using the appropriate trig identity, simplify.

1. $\sin \frac{\pi}{12} \cos \frac{5\pi}{18} - \cos \frac{\pi}{12} \sin \frac{5\pi}{18}$

2. $\frac{\tan 58^\circ + \tan 31^\circ}{1 - \tan 58^\circ \tan 31^\circ}$

Examples: Find the exact values of the given trig function.

1. Find the exact value of $\sin(\alpha + \beta)$ if $\sin \alpha = -\frac{3}{5}$ and $\cos \beta = -\frac{1}{13}$. α is in Quadrant IV. β is in Quadrant III.