

Section 6.2: The addition and Subtraction Formulas.

1) $\cos(\alpha - \beta) =$

Ex: Find the exact value of $\cos 15^\circ$

2) $\cos(\alpha + \beta) =$

Ex: Find the exact value of $\cos \frac{7\pi}{12}$

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

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

Ex: Find the exact value of $\sin 75^\circ$

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

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

Ex: Find the exact value of $\tan 195^\circ$

Ex: Evaluate the following:

1) $\cos(\pi + \theta)$, 2) $\sin\left(\frac{3\pi}{2} - \theta\right)$, 3) $\tan(2\pi - \theta)$

Ex: Find the exact value for the following:

1) $\sin 20^\circ \cos 80^\circ - \cos 20^\circ \sin 80^\circ$, 2) $\frac{\tan 10^\circ - \tan 40^\circ}{1 + \tan 10^\circ \tan 40^\circ}$

3) $\cos \frac{5\pi}{12} \cos \frac{7\pi}{12} - \sin \frac{5\pi}{12} \sin \frac{7\pi}{12}$, 4) $\cos 72^\circ \cos 48^\circ - \sin 72^\circ \sin 48^\circ$

5) $\sin(-7^\circ) \cos(-5^\circ) - \sin(5^\circ) \cos(7^\circ)$, 6) $\frac{\tan(15^\circ) + \tan(-50^\circ)}{\tan(15^\circ) \tan(-50^\circ) - 1}$
 7) $\cos(2x - 1) \cos(2x + 1) - \sin(1 - 2x) \sin(1 + 2x)$

Ex: Find the exact values of:

a) $\sin(\alpha + \beta)$, b) $\cos(\alpha - \beta)$, c) $\tan(\alpha - \beta)$

Given

$$\sin \alpha = -\frac{7}{25} , \quad -\frac{\pi}{2} < \alpha < 0 \quad \text{and} \quad \cos \beta = -\frac{4}{5} , \quad \frac{\pi}{2} < \beta < \pi$$

Ex: 1) If $\csc \theta = -\frac{4}{3}$ then $\cos(\frac{\pi}{2} - \theta) =$

2) If $\tan \theta = -\frac{3}{2}$ then $\tan(\frac{3\pi}{2} + \theta) =$

3) If $\sec \theta = -\frac{5}{4}$ then $\sin(\frac{3\pi}{2} - \theta) =$

Ex: Evaluate

1) $\csc[\sin^{-1}(-\frac{12}{13}) - \tan^{-1}(\frac{3}{4})]$, 2) $\tan[\cos^{-1}(-\frac{4}{5}) + \sin^{-1}(\frac{5}{13})]$

3) $\cot[\sin^{-1}(-\frac{4}{5}) - \frac{7\pi}{2}]$, 4) $\sec[\tan^{-1}(\frac{1}{2}) - 5\pi]$

Ex: Complete the identity

1) $\frac{\sin(x - \frac{\pi}{2})}{\cos(\frac{3\pi}{2} - x)}$, 2) $\tan(\frac{3\pi}{4} - x) \tan(\frac{3\pi}{4} + x)$

3) $4 \sin(\frac{\pi}{3} - x) \sin(\frac{\pi}{3} + x)$