29. $\cot^2 x - \cos^2 x = \cos^2 x \cdot \cot^2 x$

LHS: $\frac{\cos^2 x}{\sin^2 x} - \frac{\cos^2 x}{1} \cdot \frac{\sin^2 x}{\sin^2 x}$

$$\frac{\cos^2 x - \cos^2 x \sin^2 x}{\sin^2 x}$$

$$\frac{\cos^2 x (1 - \sin^2 x)}{\sin^2 x}$$

$$\cot^2 x \cos^2 x$$

Feb 1-2:16 PM

43. $\cos^5 x = (1 - 2\sin^2 x + \sin^4 x)(\cos x)$

LHS: $\cos^5 x$

$\cos x (\cos^4 x)$

$\cos x (\cos^2 x)(\cos^2 x)$

$\cos x (1 - \sin^2 x)(1 - \sin^2 x)$

$\cos x (1 - 2\sin^2 x + \sin^4 x)$

Feb 4-9:01 AM

27. $\frac{\tan^2 x}{\sec x + 1} = \frac{1-\cos x}{\cos x}$

LHS: $\frac{\sec^2 x - 1}{\sec x + 1}$

$\frac{(\sec x - 1)(\sec x + 1)}{\sec x + 1}$

$\sec x - 1$

$\frac{1}{\cos x} - 1 \frac{\cos x}{\cos x}$

$\frac{1-\cos x}{\cos x}$

Feb 4-9:03 AM

5.3 Sum & Difference Identities

Obj: 1. Apply sum/difference identities to sine, cosine, and tangent.

Sum / Difference

$\sin(u \pm v) = \sin u \cos v \pm \cos u \sin v$

$\cos(u \pm v) = \cos u \cos v \mp \sin u \sin v$

$\tan(u \pm v) = \frac{\tan u \pm \tan v}{1 \mp \tan u \tan v}$

Feb 4-9:09 AM

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

$\cos(45^\circ - 30^\circ)$

$= \cos 45^\circ \cos 30^\circ + \sin 45^\circ \sin 30^\circ$

$= \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} \cdot \frac{1}{2}$

$= \frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{4} = \frac{\sqrt{6}+\sqrt{2}}{4}$

Feb 4-9:36 AM

$\sin 75^\circ$

$\sin(45^\circ + 30^\circ)$

$\sin 45^\circ \cos 30^\circ + \cos 45^\circ \sin 30^\circ$

$\frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2} \cdot \frac{1}{2}$

$\frac{\sqrt{6}+\sqrt{2}}{4}$

Feb 4-9:40 AM

Prove: $\cos\left(\frac{\pi}{2} - x\right) = \sin x$

LHS:

$\cos\frac{\pi}{2}\cos x + \sin\frac{\pi}{2}\sin x$

$0 \cdot \cos x + 1 \cdot \sin x$

$\sin x$

Feb 4-9:43 AM

Write as a single expression of sine or cosine.

$\sin 22° \cos 13° \pm \cos 22° \sin 13°$

$\sin(22° \pm 13°)$

$\sin(35°)$

Feb 4-9:45 AM