Trig 7.3

Use sum and difference identities for sin, cos, tan

sum

difference

verify (an identity)

exact values

reference triangles (if not in Quadrant 1)

Quiz 7.1-7.2

p. 435

(29) $\dfrac{\csc x}{\cot x} = \sqrt{2}$

$$\frac{\frac{\sin x}{\cos x}\cdot\frac{1}{\sin x}}{\frac{\cos x}{\sin x}} = \sqrt{2}$$

$\frac{1}{\cos x} = \pm\sqrt{2}$

$\sec x = \sqrt{2}$

$\cos x = \frac{1}{\sqrt{2}}$

p. 427

(26) $\sec^2 x - 1 = \dfrac{\cos x}{\csc x}$

$$\tan^2 x = \frac{\cos x}{\frac{1}{\sin x}}\cdot\frac{\sin x}{1}$$

$\tan^2 x = \cos x \sin x$ if $x = 30$

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

$\frac{1}{3} = \frac{\sqrt{3}}{4}$ ≠

p. 443 (35)

(35) $\cos(60 + A) = \sin(30 - A)$

$\cos 60 \cdot \cos B - \sin 60 \sin B = \sin 30 \cos B - \cos 30 \sin B$

$\frac{1}{2} \cdot \cos B - \frac{\sqrt{3}}{2} \cdot \sin B = \frac{1}{2} \cdot \cos B - \frac{\sqrt{3}}{2} \cdot \sin B$

(37) $\cos(180 + x) = -\cos x$

$\cos 180 \cos x - \sin 180 \sin x = -\cos x$

$\frac{-1}{1} \cdot \cos x - 0 \cdot \sin x = -\cos x$

$-\cos x = -\cos x$

Sum and Difference Identities for the Cosine Function

If α and β represent the measures of two angles, then the following identities hold for all values of α and β.

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

Sum and Difference Identities for the Sine Function

If α and β represent the measures of two angles, then the following identities hold for all values of α and β.

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

Use sum or difference identities to find the exact value of each trigonometric function.

5. $\cos 165°$

6. $\tan \frac{\pi}{12}$

7. $\sec 795°$

Find the 1st quad. reference angle
Determine whether pos or neg answer

Sum and Difference Identities for the Tangent Function

If α and β represent the measures of two angles, then the following identities hold for all values of α and β.

$$\tan(\alpha \pm \beta) = \frac{\tan\alpha \pm \tan\beta}{1 \mp \tan\alpha \tan\beta}$$

You will be asked to derive these identities in Exercise 47.

Don't copy this all down, just watch
Will use but not derive the formula

pos or neg if outside Q1
recip if sec or csc

14. $\cos 105°$

15. $\sin 165°$

17. $\sin \frac{\pi}{12}$

18. $\tan 195°$

5 Use the sum or difference identity for tangent to find the exact value of tan 285°.

get both sides =
use appropriate + or - ident

Verify that each equation is an identity.

10. $\sin(90^\circ + A) = \cos A$

6 Verify that $\csc\left(\frac{3\pi}{2} + A\right) = -\sec A$ is an identity.