

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

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

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

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

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

p. 427

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

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

$$\tan^2 x = \cos x \sin x \quad \text{if } x = 30$$

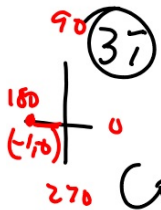
$$\frac{1}{\sqrt{3}} \cdot \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{2} \cdot \frac{1}{2}$$

$$\frac{1}{3} = \frac{\sqrt{3}}{4} \quad \parallel$$

p. 443 (35)

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

$$\cos 60 \cdot \cos B - \sin 60 \sin B = \sin 30 \cos B - \cos 30 \sin B$$
$$\frac{1}{2} \cdot \cos B - \frac{\sqrt{3}}{2} \cdot \sin B = \frac{1}{2} \cdot \cos B - \frac{\sqrt{3}}{2} \cdot \sin B$$



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

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

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

$$-\cos x = -\cos x$$

**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. $\cos 165^\circ$

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

7. $\sec 795^\circ$

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

14. $\cos 105^\circ$

15. $\sin 165^\circ$

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

18. $\tan 195^\circ$

pos or neg if outside Q1
recip if sec or csc

- 5** Use the sum or difference identity for tangent to find the exact value of $\tan 285^\circ$.

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.