

Sum/Difference Identities

7.3

2.2.16

Lesson 11

Warm-up

Simplify

$$1) \cos x = \frac{\cot x}{\csc x}$$

$$2) \sin x \tan x = \sec x - \cos x$$

Solve for cos if

$$3) \cos^2 x + \sin^2 y = 1$$

$$\cos =$$

Sum and Difference identity for Cosine

$$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

Why is it useful?

I do:

Solve for $\cos 735$

Find co-terminal angle	735=
Find common angles that add up or differ to the co-terminal angle.	
Use the sum/difference identity	
Simplify	

We do:

Solve for $\cos 105$

Find co-terminal angle	
Find common angles that add up or differ to the co-terminal angle.	

Use the sum/difference identity	
Simplify	

You do:
 $\cos 7\pi/12$

Find co-terminal angle	
Find common angles that add up or differ to the co-terminal angle.	
Use the sum/difference identity	
Simplify	

Sum and Difference identity for sine
 $\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$

I do:

Find the value of $\sin(x - y)$ if $0 < x < \frac{\pi}{2}$, $\sin x = \frac{9}{41}$ and $\sin y = \frac{7}{25}$

Solve for the missing cos values	$\cos x = \sqrt{1 - \sin^2 x}$
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Plug into formula	

We do:

Find the value of $\sin(x - y)$ if $0 < x < \frac{\pi}{2}$, $\sin x = \frac{4}{9}$ and $\sin y = \frac{1}{4}$

Solve for the missing cos values	$\cos x = \sqrt{1 - \sin^2 x}$
Plug into formula	

$$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

I do:
 $\tan 285 =$

Break up $\tan 285$	
Plug into formula	

I do:

$$\tan(x - y) \text{ if } \sin x = \frac{8}{17}, \cos y = \frac{3}{5}$$

Solve for $\tan x$ and $\tan y$	$\tan x =$
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	$\tan y =$
Plug into formula	

We do:

$$\tan(x + y) \text{ if } \csc x = \frac{5}{3}, \cos y = \frac{5}{13}$$

Solve for $\tan x$ and $\tan y$	$\tan x =$ $\tan y =$
Plug into formula	

You do:

$$\tan 75$$

Exit Slip

$$\text{Solve for } \sin(x + y) \text{ if } \cos x = \frac{8}{17}, \sin y = \frac{12}{37}$$