Addition & Subtraction Identities

Please change tonight's homework assignment to

be Worksheet 7A All

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Addition & Subtraction Identities

PreCalc

Unit 7 Day 1

$\sin(x + y) = \sin x \cos y + \cos x \sin y$

$\sin(x - y) = \sin x \cos y - \cos x \sin y$

$\cos(x + y) = \cos x \cos y - \sin x \sin y$

$\cos(x - y) = \cos x \cos y + \sin x \sin y$

$$\tan(x + y) = \frac{\tan x + \tan y}{1 - \tan x \tan y}$$

$$\tan(x - y) = \frac{\tan x - \tan y}{1 + \tan x \tan y}$$

You must have these memorized ! ! !

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Simplify each using the formula:

$\cos(x-y) : \cos x\cos y + \sin x\sin y$

1. $\cos(\pi - x)$

$: \cos\pi\cdot\cos x + \sin\pi\sin x$

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

2. $\sin\left(\frac{\pi}{2} - \beta\right)$

$\sin(x-y) : \sin x\cos y - \cos x\sin y$

$: \sin\frac{\pi}{2}\cos\beta - \cos\frac{\pi}{2}\sin\beta$

$: 1\cdot\cos\beta - 0\cdot\sin\beta$

$: \cos\beta$

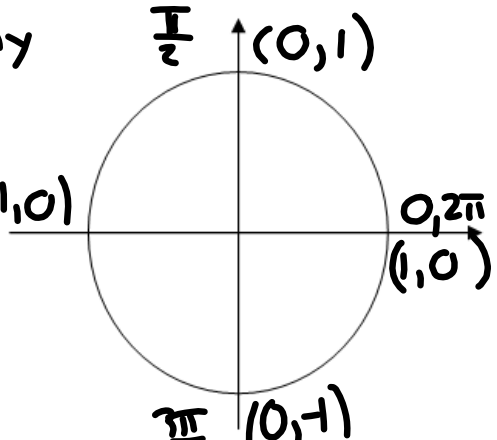
3. $\sin(\pi + \alpha)$

$: \sin x\cos\alpha + \cos x\sin\alpha$

$: \sin\pi\cos\alpha + \cos\pi\sin\alpha$

$: 0\cdot\cos\alpha + (-1)\sin\alpha$

$: -\sin\alpha$



	π/6	π/4	π/3
sin	1/2	√2/2	√3/2
cos	√3/2	√2/2	1/2
tan	√3/3	1	√3

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Rewrite as a trigonometric function of a single angle, then evaluate:

4. $\cos\left(\frac{7\pi}{18}\right)\cos\left(\frac{2\pi}{9}\right) + \sin\left(\frac{7\pi}{18}\right)\sin\left(\frac{2\pi}{9}\right)$ $\cos(x-y)$

Change sign in #4

$: \cos\left(\frac{7\pi}{18} - \frac{4\pi}{9}\right) : \cos\left(\frac{7\pi}{18} - \frac{8\pi}{18}\right) : \cos\frac{-3\pi}{18} = \cos\frac{\pi}{6} : \frac{\sqrt{3}}{2}$

5. $\dfrac{\tan\left(\frac{5\pi}{9}\right) + \tan\left(\frac{\pi}{9}\right)}{1 - \tan\left(\frac{5\pi}{9}\right)\tan\left(\frac{\pi}{9}\right)}$ $\tan(x+y)$

$: \tan\left(\frac{5\pi}{9} + \frac{\pi}{9}\right) : \tan\left(\frac{6\pi}{9}\right) = \tan\frac{2\pi}{3}$

$: -\sqrt{3}$

6. $\sin\left(\frac{2\pi}{3}\right)\cos\left(\frac{\pi}{6}\right) - \cos\left(\frac{2\pi}{3}\right)\sin\left(\frac{\pi}{6}\right)$ Change 10pi/9 to 2pi/3

$\sin(x-y)$

$: \sin\left(\frac{4\pi}{6} - \frac{\pi}{6}\right) : \sin\left(\frac{4\pi}{6} - \frac{\pi}{6}\right) : \sin\frac{3\pi}{6} = \sin\frac{\pi}{2}$

$: 1$

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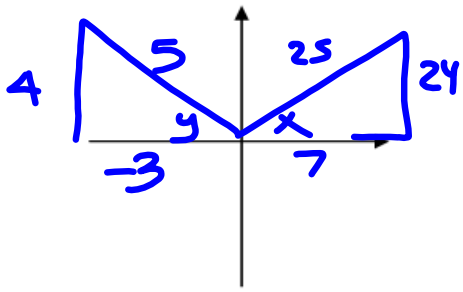
7. Find the exact values of the following if x is in quadrant I and y is in quadrant II, $\sin x = \frac{24}{25}$ and $\sin y = \frac{4}{5}$



a) $\sin(x + y)$: $\sin x \cos y + \cos x \sin y$

: $\left(\frac{24}{25}\right)\left(\frac{-3}{5}\right) + \left(\frac{7}{25}\right)\left(\frac{4}{5}\right)$

: $\frac{-72}{125} + \frac{28}{125}$: $\frac{-44}{125}$

b) $\sin(x - y)$: $\sin x \cos y - \cos x \sin y$

: $\left(\frac{24}{25}\right)\left(\frac{-3}{5}\right) - \left(\frac{7}{25}\right)\left(\frac{4}{5}\right)$

: $\frac{-72}{125} - \frac{28}{125}$: $\frac{-100}{125}$: $\frac{-4}{5}$

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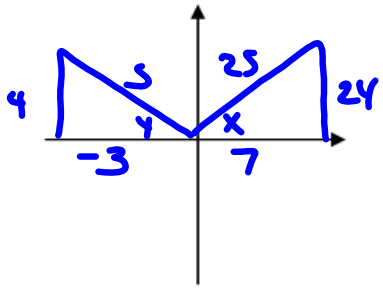
c) $\cos(x + y)$: $\cos x \cos y - \sin x \sin y$

: $\left(\frac{7}{25}\right)\left(\frac{-3}{5}\right) - \left(\frac{24}{25}\right)\left(\frac{4}{5}\right)$

: $\frac{-21}{125} - \frac{96}{125}$: $\frac{-117}{125}$



d) $\cos(x - y)$: $\cos x \cos y + \sin x \sin y$

: $\left(\frac{7}{25}\right)\left(\frac{-3}{5}\right) + \left(\frac{24}{25}\right)\left(\frac{4}{5}\right)$

: $\frac{-21}{125} + \frac{96}{125}$: $\frac{75}{125}$: $\frac{3}{5}$

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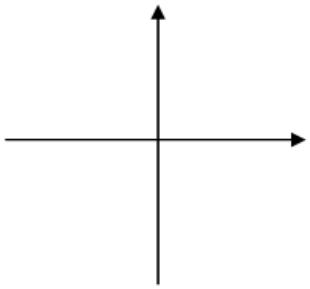
e) tan (x +y) : $\frac{\tan x + \tan y}{1 - \tan x \tan y}$

$\frac{\frac{24}{7} + \left(-\frac{4}{3}\right)}{1 - \left(\frac{24}{7}\right)\left(-\frac{4}{3}\right)}$

: $\frac{72 + -28}{21 + 96}$: $\frac{44}{117}$



Look at #74 on page 542

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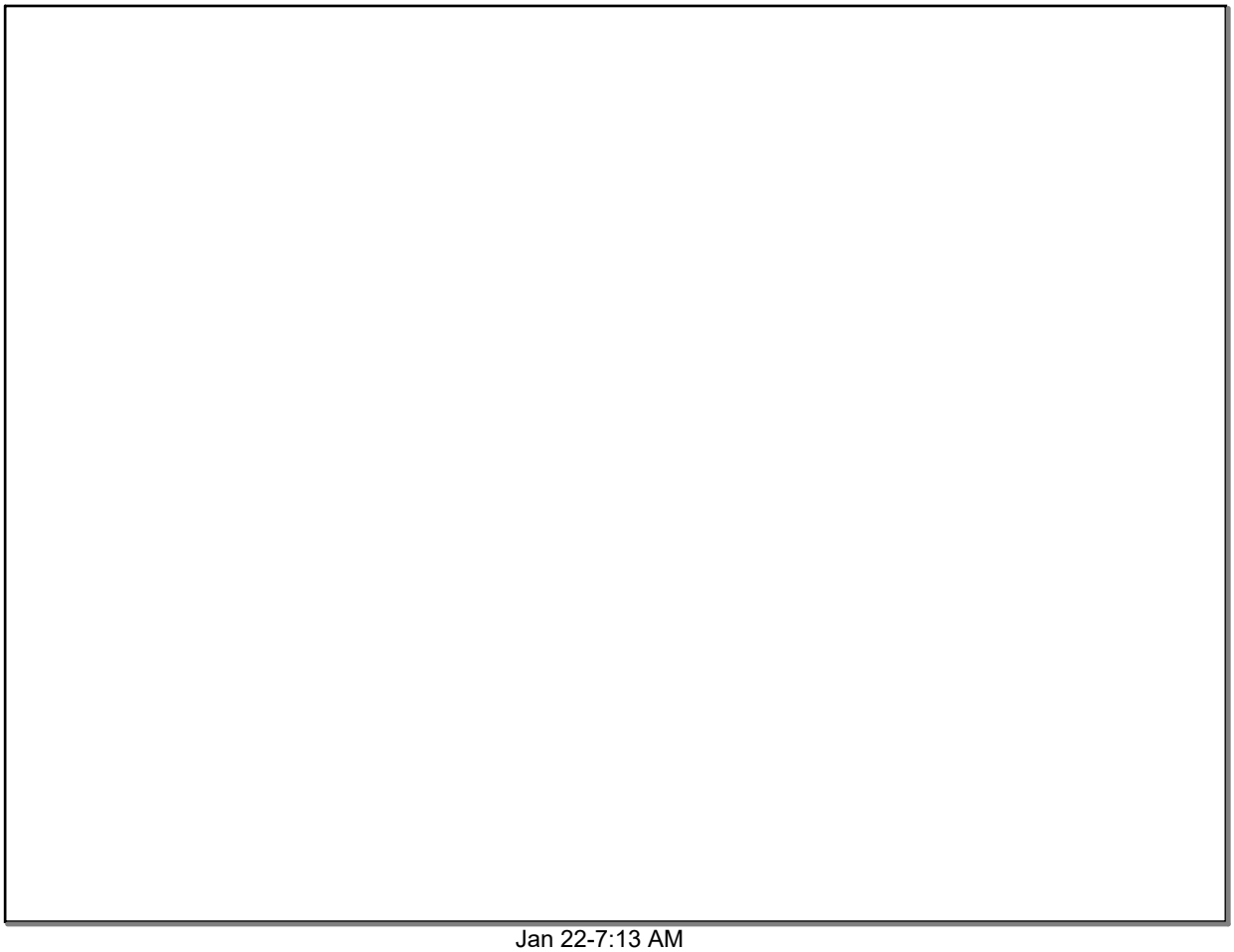
Homework 7-1: Wkst 7A

Jan 2-3:40 PM



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