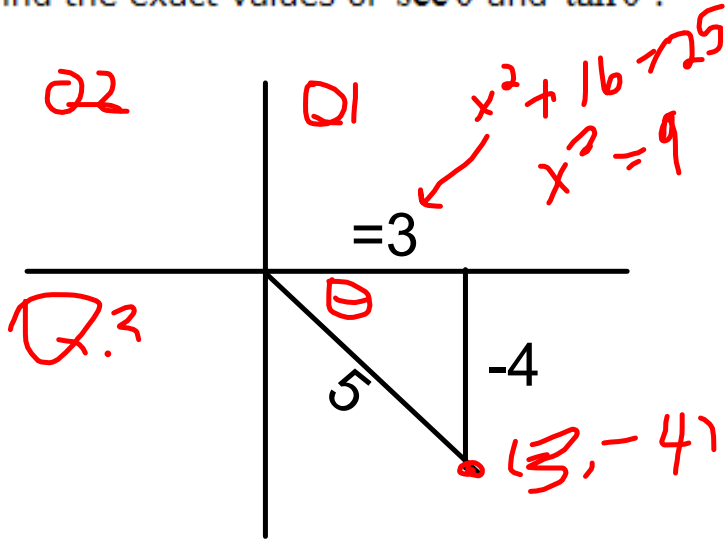
Let θ be an angle in quadrant IV such that $\sin\theta = -\frac{4}{5}$.

Find the exact values of $\sec\theta$ and $\tan\theta$.



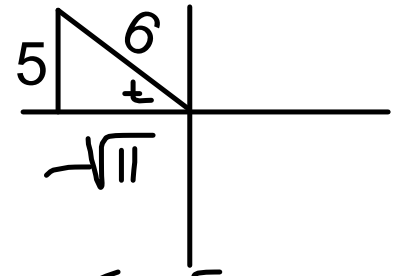
$\sec\theta$ = ☐

$\tan\theta$ = ☐

sec=1/cos = hyp/adj = 5/3

tan= opp/adj = -4/3

sin t = 5/6 in Q2



$36-25=11=x^2$

sect= 1/cost= hyp/adj

$=6/(-\sqrt{11})$

tan t = opp/adj

$5/-\sqrt{11}$

soh sin = opp/hyp

cah cos = adj/hyp

toa tan = opp/adj

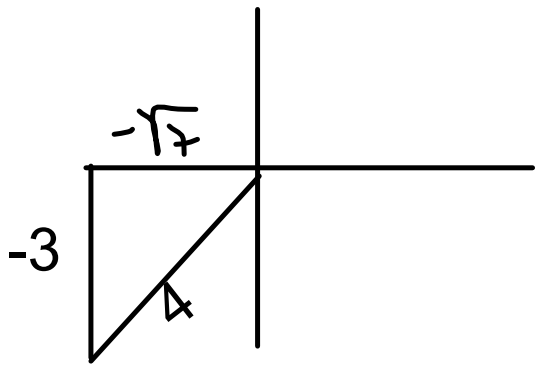
Let θ be an angle in quadrant III such that $\csc\theta = -\frac{4}{3}$. = $\frac{\text{hyp}}{\text{opp}}$

Find the exact values of $\tan\theta$ and $\cos\theta$.

You answered:

$\tan\theta = \frac{+3\sqrt{7}}{+7}$

$\cos\theta = \frac{-\sqrt{7}}{4}$ ✓



$\sqrt{16-9}=\sqrt{7}$

Trig Equations

EX: sin x = .5

three possibilities

1. Condition Equation is true for a specific x value like x = pi/6

2. Never True called a Contradiction

EX: sin x = 2

3. True ALWAYS called an IDENTITY

Some we know...

Reciprocal Identities

sec(x) = 1/cos(x) must know this!

csc(x) = 1/sin(x) must know this!

cot(x) = 1/ tan(x) must know this!

cos(x) = 1/sec(x)

sin(x) = 1/ csc(x)

tan(x) = 1/cot(x)

Quotient Identites

tan(x) = sin(x) / cos(x)

cot(x) = cos(x) / sin(x)

Pythagorean Identities

$$\sin^2(t) + \cos^2(t) = 1$$

$$1 + \cot^2(t) = \csc^2(t)$$

$$\tan^2(t) + 1 = \sec^2(t)$$

Statement	Rule
$\sin x \left(1 + \cot^2 x\right)$	
$= \sin x \left(\csc^2 x\right)$	Pythagorean
$= \frac{1}{\csc x} \left(\csc^2 x\right)$	Reciprocal
$= \csc x$	Algebra

Statement	Rule
$\csc x \left(1 - \cos^2 x\right)$	
$= \csc x \left(\sin^2 x + \cos^2 x - \cos^2 x\right)$	Pythagorean
$= \csc\left(x\right) \sin^2 x$	Algebra
$= \frac{1}{\sin x} \sin^2 x$	Reciprocal
$= \sin x$	Algebra
$=$	***Rule ?***

$\sec x - \sin x \tan x$	
$= \frac{1}{\cos x} - \sin x \tan x$	Reciprocal
$= \frac{1}{\cos x} - \sin x \frac{\sin x}{\cos x}$	Quotient
$= \frac{1 - \sin^2 x}{\cos x}$	Algebra
$= \frac{\cos^2 x + \sin^2 x - \sin^2 x}{\cos x}$	Pythagorean
$= \frac{\cos^2 x}{\cos x}$	Algebra
$= \cos x$	Algebra

Sum and Difference Identities:

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

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

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

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

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

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

Double-angle Identities:

(1) $\sin 2x = 2 \sin x \cos x$

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

(3) $\cos 2x = 2 \cos^2 x - 1$

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

(5) $\tan 2x = \dfrac{2 \tan x}{1 - \tan^2 x}$