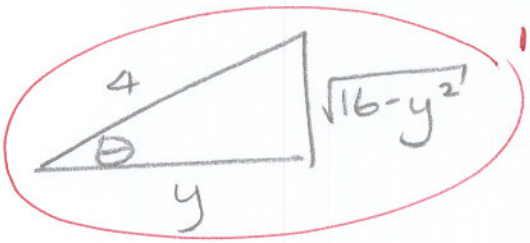
Math 49B
Group Quiz 2
Wed Jan 23, 2008

Names: WHITE

THIS IS A NO CALCULATOR QUIZ

[2 POINTS] Write an algebraic expression that is equivalent to $\tan\left(\arccos\frac{y}{4}\right)$. **HINT: USE TRIANGLES.**



$\theta = \arccos\frac{y}{4}$

$\cos\theta = \frac{y}{4}$

$\tan\theta = \frac{\sqrt{16-y^2}}{y} = \tan\left(\arccos\frac{y}{4}\right)$

[2 POINTS] Determine if the following statement is true or false. **If it is true, explain briefly. If it is false, give a counterexample.**

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

FALSE

eg. $\tan^{-1} 1 = \frac{\pi}{4}$

$\frac{\cos^{-1} 1}{\sin^{-1} 1} = \frac{0}{\frac{\pi}{2}} = 0$

[3 POINTS] If $\tan x = \frac{5}{12}$ and $\sec x = -\frac{13}{12}$, find the value of $\csc x$ using identities, **NOT TRIANGLES.**

½ POINT EACH

$\cos x = \frac{1}{\sec x} = \frac{-12}{13}$

$\tan x = \frac{\sin x}{\cos x}$ so $\sin x = \tan x \cos x$

$= \frac{5}{12} \cdot \frac{-12}{13} = \frac{-5}{13}$

$\csc x = \frac{1}{\sin x} = \frac{-13}{5}$

[3 POINTS] Perform the addition and use fundamental identities to simplify $\frac{1}{1-\cos t} + \frac{1}{1+\cos t}$.

$= \frac{(1+\cos t)+(1-\cos t)}{(1+\cos t)(1-\cos t)}$

$= \frac{2}{1-\cos^2 t}$

$= \frac{2}{\sin^2 t}$ OR $= 2\csc^2 t$

½ POINT EACH