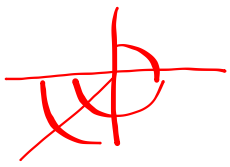
Warm-up 2/24/17

Find sin θ and cos θ if tan θ = 1/2 and sin θ < 0.



$\tan^2\theta + 1 = \sec^2\theta$

$\frac{1}{4} + 1 = \sec^2\theta$

$\frac{5}{4} = \sec^2\theta$

$\pm\frac{\sqrt{5}}{2} = \sec\theta$

$-\frac{2}{\sqrt{5}} = \cos\theta$

$-\frac{2}{\sqrt{5}} \cdot \frac{1}{2} = \frac{\sin\theta}{-\frac{2}{\sqrt{5}}}$

$-\frac{1}{\sqrt{5}} = \sin\theta$

Simplify the expression.

$$\frac{(\sec x + 1)(\sec x - 1)}{\sin^2 x} = \frac{\sec^2 x - 1}{\sin^2 x} = \frac{\tan^2 x}{\sin^2 x}$$

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

Simplify the expression.

$\sin x \cos x \tan x \sec x \csc x$

$\sin x \cdot \cos x \cdot \frac{\sin x}{\cos x} \cdot \frac{1}{\cos x} \cdot \frac{1}{\sin x}$

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

Simplify the expression.

$\frac{\cos x}{1-\sin x} - \frac{\sin x}{\cos x}$

$\frac{\cos^2 x - (\sin x - \sin^2 x)}{\cos x(1-\sin x)}$

$\frac{\cos^2 x - \sin x + \sin^2 x}{\cos x(1-\sin x)}$

$\frac{1-\sin x}{\cos x(1-\sin x)} = \frac{1}{\cos x} = \sec x$

Assignment: pp. 410 - 411
18 - 38 evens, 77, 79