

Key

Quiz 5

Show *all* your work. No credit is given without reasonable supporting work. There are *two* sides to this quiz.

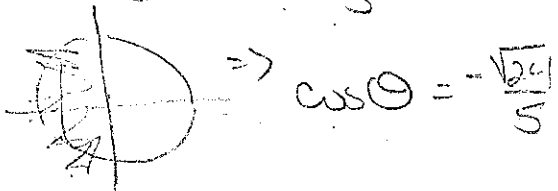
1. [3] (§5.2 #69) Given $\frac{\pi}{2} \leq \theta \leq \frac{3\pi}{2}$ and $\sin \theta = -\frac{1}{5}$. Find $\tan \theta$.

$$\sin^2 \theta + \cos^2 \theta = 1 \quad (+1)$$

$$\left(-\frac{1}{5}\right)^2 + \cos^2 \theta = 1$$

$$\cos^2 \theta = 1 - \frac{1}{25} = \frac{24}{25}$$

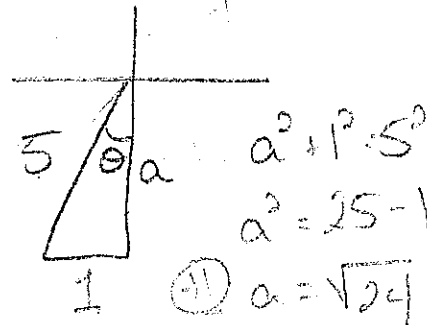
$$\cos \theta = \pm \frac{\sqrt{24}}{5}$$



$$\begin{aligned} \tan \theta &= \frac{\sin \theta}{\cos \theta} \\ &= \frac{-\frac{1}{5}}{-\frac{\sqrt{24}}{5}} \\ &= \frac{1}{\sqrt{24}} \end{aligned}$$

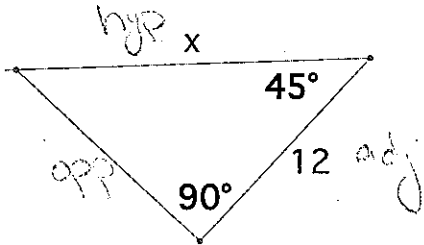
notator (+) 5
signs (-) 5

Substitua



$$\tan \theta = \frac{1}{\sqrt{24}} \quad (+1)$$

2. [2] (§6.2 #11) Find the length of the side marked x in the triangle below.



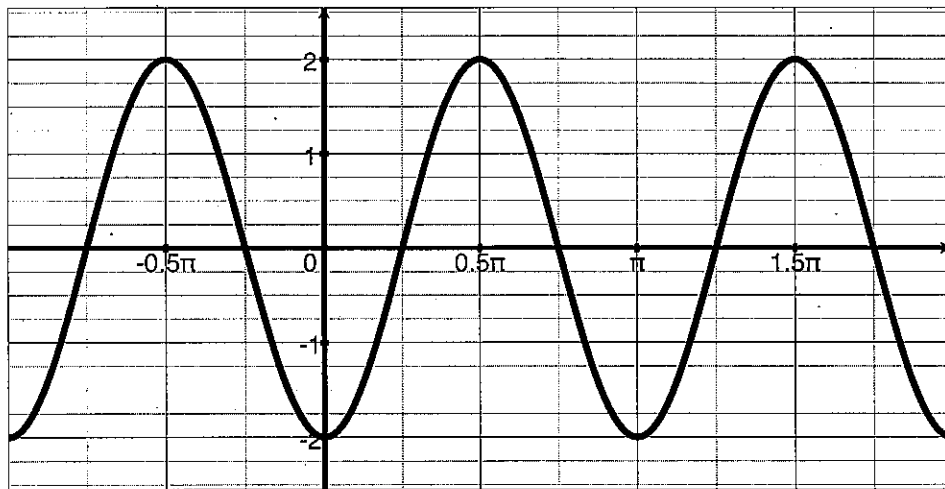
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$$\cos 45^\circ = \frac{12}{x} \quad (+1)$$

$$x = \frac{12}{\cos 45^\circ} = \frac{12}{\frac{1}{\sqrt{2}}} = 12\sqrt{2} \quad (+1)$$

3. [3] (§5.3 #41) Write an equation that represents the curve below in the form:

$$y = a \cos k(x - b)$$



amplitude: 2 (+.5)

flipped over x-axis (+.5)

period: π (+.5)

phase shift: none

$$-2 \cos(2(x))$$

(+.5) (+.5) (+.5)

4. [2] True or false: $\sin^{-1}(\sin(\theta)) = \theta$ for all angles θ . If it is true, explain why, if it is false, find an example when the equality fails.

false:

$$\sin^{-1}(\sin \frac{3\pi}{4}) = \sin^{-1}(\frac{1}{\sqrt{2}}) = \frac{\pi}{4}$$

$$\text{but } \frac{3\pi}{4} \neq \frac{\pi}{4}$$