Math 130 - Quiz 5

October 7, 2020

Name key

Score _____

The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. You must work individually on this quiz. This quiz is due October 12.

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1. (2 points) Determine the period and find two consecutive asymptotes for the graph of $y = -3\cot(2x)$.

Period $= \frac{\pi}{2}$

Asymptotes ... $2x = 0$ or $2x = \pi$

$x = 0$ $\qquad$ $x = \frac{\pi}{2}$

2. (2 points) Determine the **exact value** of each.

(a) $\arcsin(-1/2) = -\frac{\pi}{6}$

BECAUSE $\sin\left(-\frac{\pi}{6}\right) = -\frac{1}{2}$

AND $-\frac{\pi}{6}$ IS BETWEEN $-\frac{\pi}{2}$ & $\frac{\pi}{2}$.

(b) $\tan^{-1}(-1/\sqrt{3}) = -\frac{\pi}{6}$

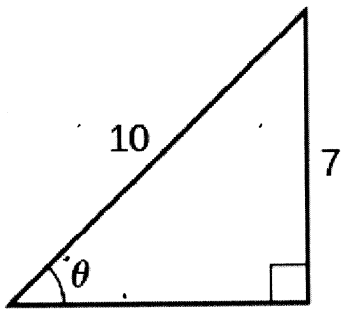
THINK ABOUT AS $\dfrac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}}$

BECAUSE

$\tan\left(-\frac{\pi}{6}\right) = \dfrac{-1/2}{\sqrt{3}/2}$ AND $-\frac{\pi}{6}$

IS BETWEEN $-\frac{\pi}{2}$ AND $\frac{\pi}{2}$.

3. (2 points) Find the angle θ. Round to the nearest hundredth.

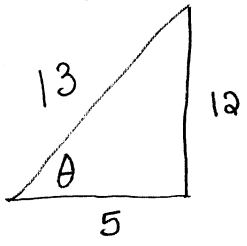


$\sin\theta = \frac{7}{10}$

$\theta = \sin^{-1}\left(\frac{7}{10}\right) \approx 0.78$

$\approx 44.43^\circ$

4. (2 points) Use a right triangle to find the **exact value** of $\cos(\tan^{-1}(12/5))$.



$\tan\theta = \frac{12}{5}$ ← θ

$\cos\theta = \frac{5}{13}$

$5^2 + 12^2 = 169 \Rightarrow \text{Hyp} = 13$

5. (2 points) Verify the identity: $\cos x\,(\tan x - \sec(-x)) = \sin x - 1$

DISTRIBUTE!

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

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

$= \sin x - 1$