Bellwork Alg 2 Wednesday, May 8, 2019

Use the Unit Circle to find the EXACT value of each. Simplify and rationalize all fractions as necessary.

1. $\sec \frac{23\pi}{6}$ 2. $\cot \frac{-31\pi}{3}$ 3. $\csc \frac{55\pi}{4}$ 4. $\cot(-1950°)$

Use a calculator to find each to the nearest hundredth.

5. $\csc 442°$ 6. $\sec \frac{-18\pi}{11}$ 7. $\cot(-13°)$

8. Given $\text{Sec}\theta = \frac{29}{20}$ find the other five trigonometric ratios. Leave answers as fractions. Rationalize denominators and simplify.

$\text{Sin}\theta =$ $\text{Cos}\theta =$ $\text{Tan}\theta =$ Cot $\theta =$ $\text{Csc}\theta =$

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ANSWERS

Use the Unit Circle to find the EXACT value of each. Simplify and rationalize all fractions as necessary.

1. $\sec\frac{23\pi}{6}$

$\frac{23\pi}{6}$ is coterminal with $\frac{11\pi}{6}$

$= \frac{1}{\cos\left(\frac{11\pi}{6}\right)}$

$= \frac{1}{\frac{\sqrt{3}}{2}} = \frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$= \frac{2\sqrt{3}}{3}$

2. $\cot\frac{-31\pi}{3}$

$-\frac{31\pi}{3}$ is coterminal with $\frac{5\pi}{3}$

$= \frac{1}{\tan\left(\frac{5\pi}{3}\right)}$ or $\frac{x}{y}$ at $\frac{5\pi}{3}$

$= \frac{\frac{1}{2}}{\frac{-\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$= -\frac{\sqrt{3}}{3}$

3. $\csc\frac{55\pi}{4}$

$\frac{55\pi}{4}$ coterminal with $\frac{7\pi}{4}$

$= \frac{1}{\sin\frac{7\pi}{4}}$

$= \frac{1}{-\frac{\sqrt{2}}{2}}$

$= -\frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

$= -\frac{2\sqrt{2}}{2}$

$= -\sqrt{2}$

4. $\cot(-1950°)$

$-1950°$ IS COTERMINAL WITH $210°$

$= \frac{1}{\tan 210°}$ or $\frac{x}{y}$ at $210°$

$= \frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \sqrt{3}$

Use a calculator to find each to the nearest hundredth.

5. $\csc 442°$

$= \frac{1}{\sin 442°}$

$= 1.01$

6. $\sec\frac{-18\pi}{11}$

$= \frac{1}{\cos\left(\frac{-18\pi}{11}\right)}$

$= 2.41$

7. $\cot(-13°)$

$= \frac{1}{\tan(-13°)}$

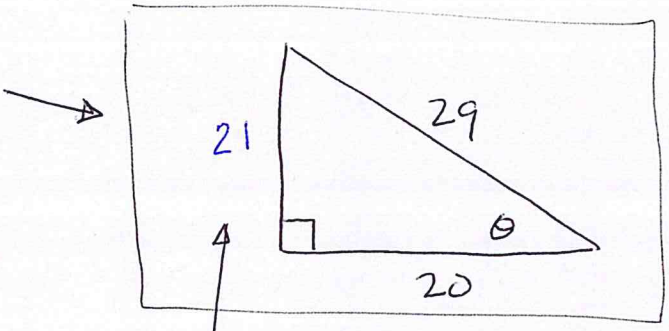
$= -4.33$

8. Given $\sec\theta = \frac{29}{20}$ find the other five trigonometric ratios. Leave answers as fractions. Rationalize denominators and simplify.

$\sin\theta = \frac{21}{29}$ $\cos\theta = \frac{20}{29}$ $\tan\theta = \frac{21}{20}$ ~~$\sec\theta$~~ COT $= \frac{20}{21}$ $\csc\theta = \frac{29}{21}$

$\sec\theta = \frac{29}{20}$

$\cos\theta = \frac{20}{29} = \frac{\text{adj leg}}{\text{hypot}}$



use pythagorean theorem to find other leg

$\sqrt{29^2 - 20^2} = 21$