

Bellwork Alg 2 Thursday, April 16, 2020

1. C is the right angle in $\triangle ABC$. If $\tan B = \frac{84}{13}$ find the remaining five trig ratios.

$$\cos A =$$

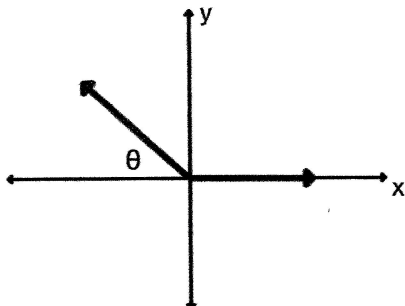
$$\sin A =$$

$$\sec A =$$

$$\csc A =$$

$$\cot A =$$

2. The reference angle for the angle shown below in Standard Position is $\theta = \frac{3\pi}{11}$. State both a positive and negative measure for this angle, in radians.



Positive:

Negative:

3. Find the EXACT value of each using the Unit Circle. You can find a copy of the Unit Circle on my blog under the heading "Helpful Math Resources and Math Links". Give answer in simplified radical form with rationalized denominators.

a. $\tan \frac{14\pi}{3}$

b. $\cos \frac{-19\pi}{6}$

c. $\csc 840^\circ$

d. $\cot 15\pi$

1. C is the right angle in $\triangle ABC$. If $\tan B = \frac{84}{13}$ find the remaining five trig ratios.

$$\cos A = \frac{A}{H} = \frac{84}{85}$$

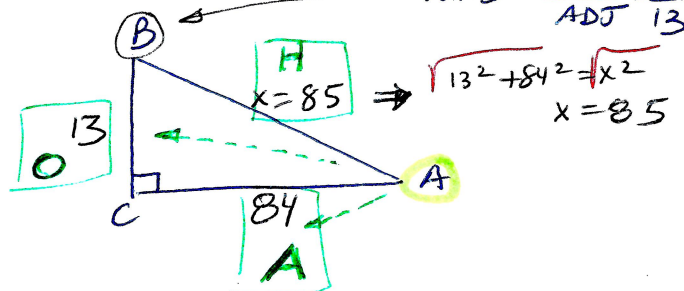
$$\sin A = \frac{13}{85}$$

$$\tan B = \frac{\text{OPP}}{\text{ADJ}} = \frac{84}{13}$$

$$\sec A = \frac{1}{\cos} = \frac{85}{84}$$

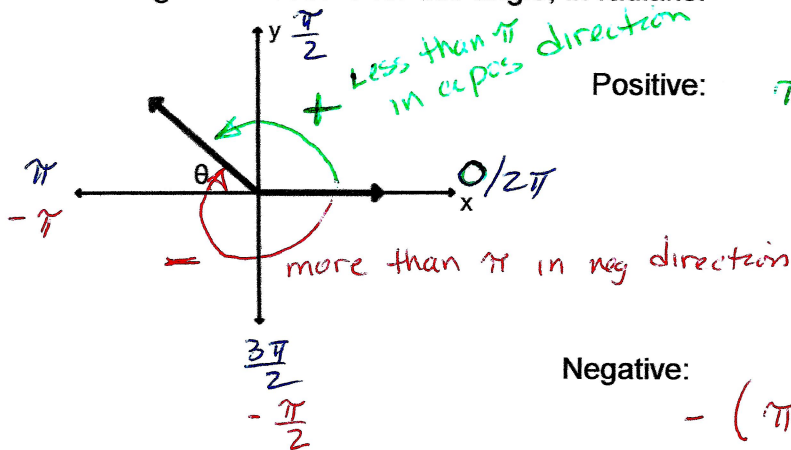
$$\csc A = \frac{1}{\sin} = \frac{85}{13}$$

$$\cot A = \frac{1}{\tan} = \frac{13}{84}$$



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2. The reference angle for the angle shown below in Standard Position is $\theta = \frac{3\pi}{11}$. State both a positive and negative measure for this angle, in radians.



Positive:

$$\pi - \theta = \pi - \frac{3\pi}{11} = \frac{11\pi}{11} - \frac{3\pi}{11} = \frac{8\pi}{11}$$

Negative:

$$-(\pi + \theta) = -(\pi + \frac{3\pi}{11}) = -(\frac{11\pi}{11} + \frac{3\pi}{11}) = -\frac{14\pi}{11}$$

3. Find the EXACT value of each using the Unit Circle. You can find a copy of the Unit Circle on my blog under the heading "Helpful Math Resources and Math Links". Give answer in simplified radical form with rationalized denominators.

a. $\tan \frac{14\pi}{3}$ $2\pi = \frac{6\pi}{3}$

$$\frac{14\pi}{3} - \frac{6\pi}{3} = \frac{8\pi}{3}$$

$$\frac{8\pi}{3} - \frac{6\pi}{3} = \frac{2\pi}{3}$$

$$\tan \frac{14\pi}{3} = \tan \frac{2\pi}{3} = \frac{y}{x} \text{ at } \frac{2\pi}{3}$$

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

$$= \left(\frac{\sqrt{3}}{2}\right) \left(-\frac{2}{1}\right)$$

$$\tan \frac{14\pi}{3} = -\sqrt{3}$$

b. $\cos \frac{-19\pi}{6}$ $2\pi = \frac{12\pi}{6}$

$$-\frac{19\pi}{6} + \frac{12\pi}{6} = -\frac{7\pi}{6}$$

$$-\frac{7\pi}{6} + \frac{12\pi}{6} = \frac{5\pi}{6}$$

$$\cos \frac{-19\pi}{6} = \cos \frac{5\pi}{6}$$

$$= x\text{-coord at } \frac{5\pi}{6}$$

$$\cos \frac{-19\pi}{6} = -\frac{\sqrt{3}}{2}$$

c. $\csc 840^\circ$

$$840^\circ = 720^\circ = 120^\circ$$

$$\csc 840^\circ = \csc 120^\circ$$

$$= \frac{1}{\sin 120^\circ}$$

$$= \frac{1}{y} \text{ at } 120^\circ$$

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

$$\csc 840^\circ = \frac{2\sqrt{3}}{3}$$

d. $\cot 15\pi$

$$15\pi - 2\pi = 13\pi$$

$$13\pi - 2\pi = 11\pi$$

$$11\pi \dots = \pi$$

$$\cot 15\pi = \cot \pi$$

$$= \frac{1}{\tan \pi} = \frac{x}{y} \text{ at } \pi = \frac{-1}{0}$$

$$\cot 15\pi \text{ is undefined}$$