

Answer on Question #57923 – Algebra – Trigonometry

6: Check all that apply. If $\tan \theta = 15/8$, then:

$\cos \theta = 17/15$ - **false.** $0 \leq \cos \theta \leq 1$, but $\frac{17}{15} > 1$

$\cot \theta = 8/15$ - **true.** $\cot \theta = \frac{1}{\tan \theta}$. Therefore $\cot \theta = \frac{1}{\frac{15}{8}} = \frac{8}{15}$

$\sec \theta = 17/8$ - **true.**

$$\sec \theta = \frac{1}{\cos \theta}, \cos^2 \theta = \frac{1}{1 + \tan^2 \theta}, \sec^2 \theta = \frac{1}{\cos^2 \theta} = 1 + \tan^2 \theta$$

From a task condition $\sec^2 \theta = 1 + \left(\frac{15}{8}\right)^2 = 4.515625$. $\sec \theta = \sqrt{4.515625} = 2.125 = \frac{17}{8}$

$\cot \theta = 15/17$ - **false,** because $\cot \theta = 8/15$ (see above)

7: Check all that apply. If $\csc \theta = 13/12$, then:

$\tan \theta = 12/5$ - **true.** $\sin \theta = \frac{1}{\csc \theta} = \frac{1}{\frac{13}{12}} = \frac{12}{13}$; $\cos \theta = \sqrt{1 - \sin^2 \theta} = \sqrt{1 - \left(\frac{12}{13}\right)^2} = \sqrt{1 - \frac{144}{169}} = 0.3847$;

$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\frac{12}{13}}{0.3847} = 2.3995 = 2.4; \frac{12}{5} = 2.4$$

$\sec \theta = 12/13$ - **false.** $\sin \theta = \frac{12}{13}$ (see below)

$\sin \theta = 12/13$ - **true.** $\sin \theta = \frac{1}{\csc \theta} = \frac{1}{\frac{13}{12}} = \frac{12}{13}$

$\cos \theta = 12/13$ - **false.** $\sin \theta = \frac{12}{13}$ (see above)