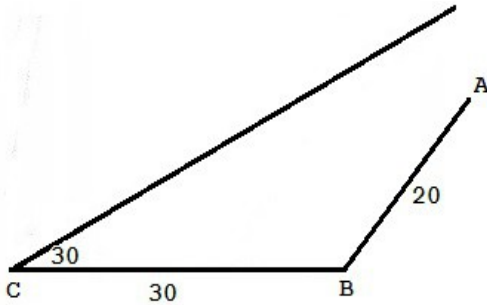


1. Billy Bob is trying to construct a triangle with an angle of 30° and an adjacent side of 30 cm. Then he wants the side opposite the 30° angle to be 20 cm long. "Fool!" says Bubba. "There ain't so such triangle." Who's right? (Hint: figure out both of the answers.)



2. Simplify: $\frac{\cos x}{\sec x} + \frac{\sin x}{\csc x}$

3. Verify the identity: $(1 - \cos \alpha)(1 + \cos \alpha) = \frac{1}{\csc^2 \alpha}$

4. Verify the identity: $\frac{\tan x + \tan y}{\cot x + \cot y} = \tan x \tan y$

5. Simplify: $\frac{\tan 74^\circ - \tan 14^\circ}{1 + \tan 74^\circ \tan 14^\circ}$

6. Find the exact value of $\cos\left(\frac{3\pi}{7}\right)\cos\left(\frac{2\pi}{21}\right) + \sin\left(\frac{3\pi}{7}\right)\sin\left(\frac{2\pi}{21}\right)$

7. Find the exact value of $\sin\left(\frac{5\pi}{12}\right)$ Hint: $\frac{2}{3} - \frac{1}{4} = \frac{5}{12}$ and multiply this by π

8. Write this expression in terms of x and y only: $\cos(\sin^{-1} x - \tan^{-1} y)$