

Name \_\_\_\_\_

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use basic identities to simplify the expression.

1)  $\frac{\csc \theta \cot \theta}{\sec \theta}$   $\frac{\frac{1}{\sin} \cdot \frac{\cos}{\sin}}{\frac{1}{\cos}} = \frac{\frac{\cos}{\sin^2}}{\frac{1}{\cos}} = \frac{\cos^2}{\sin^2} = \cot^2 x$  1) \_\_\_\_\_

2)  $\frac{\tan \theta}{\cot \theta}$   $\frac{\tan}{\frac{1}{\tan}} = \tan \cdot \tan = \tan^2 x$  2) \_\_\_\_\_

Prove the identity.

3)  $\cot^2 x = (\csc x - 1)(\csc x + 1)$  3) \_\_\_\_\_  
 $\csc^2 x - 1 = \cot^2 x$

4)  $-\tan^2 x + \sec^2 x = \sec^2 x \cos^2 x$  4) \_\_\_\_\_  
 $-\tan^2 + 1 + \tan^2 \cdot \frac{1}{\cos^2} \cdot \cos^2$   
 $1 = 1$

Find an exact value.

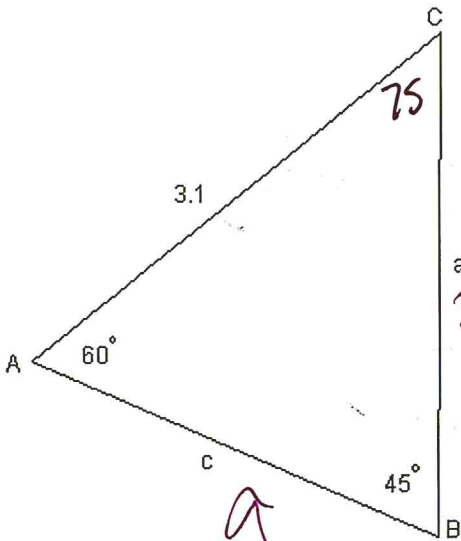
5)  $\cos 75^\circ$  5) \_\_\_\_\_  
 $\cos(30+45) = \cos(30)\cos(45) - \sin(30)\sin(45)$   
 $\frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2} - \frac{1}{2} \cdot \frac{\sqrt{2}}{2}$   
 $\frac{\sqrt{6} - \sqrt{2}}{4}$

6)  $\cos \frac{\pi}{12}$  6) \_\_\_\_\_  
 $\cos\left(\frac{\pi}{3} - \frac{\pi}{4}\right) = \cos \frac{\pi}{3} \cos \frac{\pi}{4} + \sin \frac{\pi}{3} \sin \frac{\pi}{4}$   
 $\frac{1}{2} \cdot \frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2}$   
 $\frac{\sqrt{2} + \sqrt{6}}{4}$

Solve the triangle.

7)

7) \_\_\_\_\_



$180 - 45 - 60$

$$\frac{\sin 45}{3.1} = \frac{\sin 60}{a}$$

$$3.1 \cdot \frac{a}{3.1} = \frac{\sin 60 \cdot 3.1}{\sin 45}$$

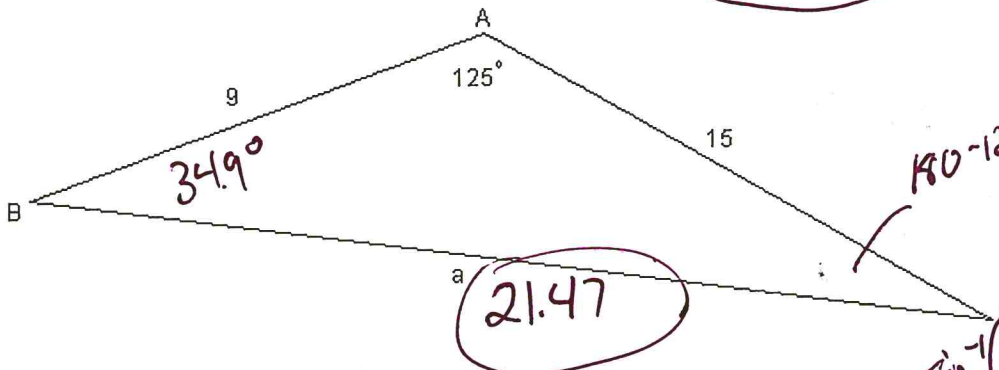
$$a = 3.8$$

$$\frac{\sin 75}{c} = \frac{\sin 45 \cdot 3.1}{3.1} \Rightarrow \frac{\sin 75}{c} = \frac{\sin 45}{3.1}$$

$$c = 4.2$$

8)

8) \_\_\_\_\_



$180 - 125 - 34.9$

$$\sin^{-1}\left(\frac{15 \cdot \sin 125}{21.47}\right) = \frac{\sin B}{15}$$

$$34.9^\circ = B$$

$$20.1^\circ = C$$

$$a^2 = 9^2 + 15^2 - 2(9)(15)\cos(125)$$

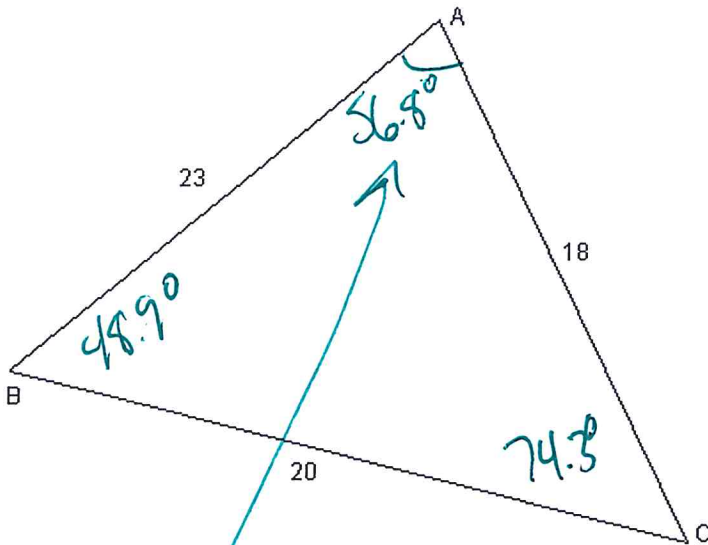
$$a^2 = 306 - 270\cos(125)$$

$$a^2 = 460.87$$

$$a = 21.47$$

9)

9) \_\_\_\_\_



$$20^2 = 23^2 + 18^2 - 2(23)(18)\cos(A)$$

$$400 = 853 - 828 \cos(A)$$

$$-453 = -828 \cos(A)$$

$$\cos(A) = \frac{453}{828}$$

$$\cos(A) = 0.547$$

$$A = 56.8^\circ$$

$$\sin^{-1}\left(\frac{\sin B}{18}\right) = \sin^{-1}\left(\frac{\sin 48.9 \cdot 18}{20}\right)$$

$$B = 48.9^\circ$$

