

Use a calculator to find the following trig values. Round to three decimal places when necessary. (Make sure the calculator is in the correct mode for each problem.)

1.  $\sin 64^\circ = \boxed{0.899}$

2.  $\cos 82^\circ = \boxed{0.139}$

3.  $\tan 39^\circ = \boxed{0.810}$

4.  $\csc 54^\circ = \boxed{1.236}$

5.  $\sec 68^\circ = \boxed{2.669}$

6.  $\cot 38^\circ = \boxed{1.280}$

7.  $\sin 30^\circ = \boxed{0.5}$

8.  $\cot 10^\circ = \boxed{5.671}$

9.  $\cos 165^\circ = \boxed{-0.966}$

10.  $\tan 45^\circ = \boxed{1}$

11.  $\cot 148^\circ = \boxed{-1.600}$

12.  $\sec 252^\circ = \boxed{-3.236}$

Find the measure of the angle that has the given trig value. Give the answer in DEGREES. Round to three decimal places when necessary.

13.  $\cot x = 3$   
 $x = \boxed{18.435^\circ}$

14.  $\csc x = 2$   
 $x = \boxed{30^\circ}$

15.  $\cos x = 0.707$   
 $x = \boxed{45.009^\circ}$

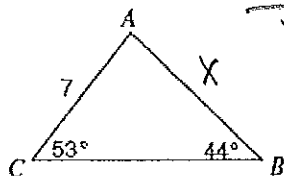
16.  $\sin x = \frac{4}{9}$   
 $x = \boxed{26.388^\circ}$

17.  $\tan x = \frac{1}{5}$   
 $x = \boxed{11.310^\circ}$

18.  $\sec x = 6$   
 $x = \boxed{80.406^\circ}$

Find each measurement indicated. Round answers to the nearest tenth.

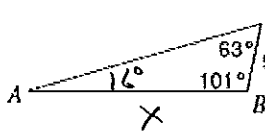
19. Find AB



$$\frac{\sin 53^\circ}{x} = \frac{\sin 44^\circ}{7}$$

$$x = \frac{7 \cdot \sin 53^\circ}{\sin 44^\circ} = \boxed{8.0}$$

20. Find AB

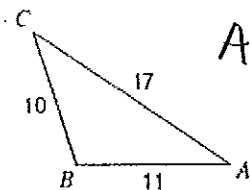


$$A = 180 - (101 + 63) = 16$$

$$\frac{\sin 16^\circ}{9} = \frac{\sin 63^\circ}{x}$$

$$x = \frac{9 \cdot \sin 63^\circ}{\sin 16^\circ} = \boxed{29.1}$$

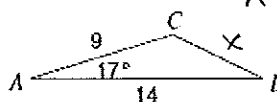
21. Find  $m\angle A$



$$A = \cos^{-1} \left( \frac{11^2 + 17^2 - 10^2}{2 \cdot 11 \cdot 17} \right)$$

$$A = \boxed{34.0^\circ}$$

22. Find BC



$$x = \sqrt{9^2 + 14^2 - 2 \cdot 9 \cdot 14 \cdot \cos 17^\circ}$$

$$x = \boxed{6.0}$$

Solve the triangle. Round answers to the nearest tenth.

23.  $m\angle A = 88^\circ$ ,  $b = 32$ ,  $c = 41$

$$\begin{array}{l} a = 51.1 \\ B = 38.7^\circ \\ C = 53.3^\circ \end{array}$$

$$a = \sqrt{32^2 + 41^2 - 2 \cdot 32 \cdot 41 \cdot \cos 88^\circ} = 51.1$$

$$\frac{\sin 88^\circ}{a} = \frac{\sin B}{32} \quad B = \sin^{-1}\left(\frac{32 \cdot \sin 88^\circ}{a}\right) = 38.7^\circ$$

$$C = 180 - (88 + B) = 53.3^\circ$$

Find the area of the triangle. Round answers to the nearest tenth.

24.  $\angle A = 62^\circ$ ,  $b = 15$ ,  $c = 24$

$$\text{Area} = \frac{1}{2} \cdot 15 \cdot 24 \cdot \sin 62^\circ = 158.9$$

25.  $a = 12$ ,  $b = 36$ ,  $c = 28$

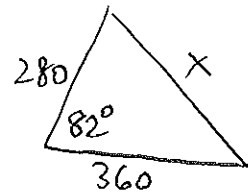
$$s = \frac{12 + 36 + 28}{2} = 38$$

$$\text{Area} = \sqrt{38(38-12)(38-36)(38-28)} = 140.6$$

Draw a picture and solve the problem. Round all answers to the nearest hundredth.

26. Two airplanes starting from the same point fly for an hour, one traveling 280 mph and the other at 360 mph. If their courses diverge by  $82^\circ$ , how far apart are they at the end of the hour?

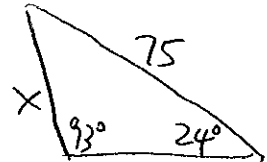
$$x = \sqrt{280^2 + 360^2 - 2 \cdot 280 \cdot 360 \cdot \cos 82^\circ} = 424.20 \text{ in}$$



27. The longest side of a triangle is 75 yards long, and is opposite a  $93^\circ$  angle. The shortest side of the triangle is opposite a  $24^\circ$  angle. Find the length of the shortest side.

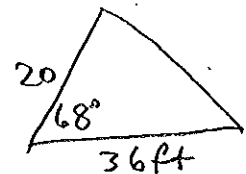
$$\frac{\sin 93^\circ}{75} = \frac{\sin 24^\circ}{x}$$

$$x = \frac{75 \cdot \sin 24^\circ}{\sin 93^\circ} = 30.55 \text{ yards}$$



28. A triangle has two sides that measure 36 feet and 20 feet, and they form a  $68^\circ$  angle. Find the area of the triangle.

$$\text{Area} = \frac{1}{2} \cdot 20 \cdot 36 \cdot \sin 68^\circ = 338.79 \text{ ft}^2$$



Find the exact trigonometric values of the following special angles. No decimal answers.

29.  $\sin 45^\circ = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

30.  $\cos 30^\circ = \frac{\sqrt{3}}{2}$

31.  $\tan 60^\circ = \sqrt{3}$

32.  $\sec 225^\circ = -\sqrt{2}$

33.  $\cot 120^\circ = -\frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$

34.  $\csc 300^\circ = \frac{1}{\sin 300^\circ} = \frac{1}{-\frac{\sqrt{3}}{2}} = -\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$