

1. Solve the following right triangles.

a) $a = 23$ in. $B = 58^\circ$

b) $a = 34$ in. $b = 27$ in.

$A = 32^\circ$ $b = 36.8$ in
 $C = 43.4$ in

$A = 51.5^\circ$ $C = 43.4$ in
 $B = 38.5^\circ$

2. Find the value of the remaining 5 trig values given one and the quadrant in which the angle lies.

a) $\sin \theta = \frac{3}{5}$ in quad. I $\csc \theta = \frac{5}{3}$

b) $\cos \theta = -\frac{5}{6}$ in quad III

$\cos \theta = \frac{4}{5}$ $\sec \theta = \frac{5}{4}$
 $\tan \theta = \frac{3}{4}$ $\cot \theta = \frac{4}{3}$

$\sin \theta = -\frac{\sqrt{11}}{6}$ $\sec \theta = -\frac{6}{5}$
 $\tan \theta = \frac{\sqrt{11}}{5}$ $\csc \theta = -\frac{6\sqrt{11}}{11}$
 $\cot \theta = \frac{5\sqrt{11}}{11}$

3. Convert the following (degrees to radians and radians to degrees)

a) 105°

b) $\frac{5\pi}{12}$

c) 2

$\frac{7\pi}{12}$

75°

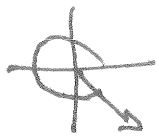
114.59°

4. Draw the following angles, find the reference angle and a coterminal angle.

a) 287°

b) $\frac{4\frac{1}{2}\pi}{5}$
 $\frac{21\pi}{5}$

c) $2\frac{2}{3}\pi$
 $-\frac{8\pi}{3}$



$RA = 73^\circ$
 $\cot = 647^\circ, -73^\circ$

$RA = \frac{4\pi}{5}$
 $\cot = \frac{11\pi}{5}, \frac{31\pi}{5}$

$RA = \frac{\pi}{3}$
 $\cot = -\frac{14\pi}{3}, -\frac{2\pi}{3}$

5. Find the following without the use of a calculator or table.

a) $\sin(45^\circ)$ $\frac{\sqrt{2}}{2}$

b) $\cos(210^\circ)$ $-\frac{\sqrt{3}}{2}$

c) $\tan\left(-\frac{3\pi}{4}\right)$ 1

d) $\cos(\pi)$ -1

e) $\sec(-420^\circ)$ 2

f) $\sin\left(-\frac{5\pi}{6}\right)$ $-\frac{1}{2}$

6. Use the following information to find the missing piece (arc length, radius or angle (in radians)) also find the area of the sector.

a) $r = 12$ $s = 36$ $\theta = 3$

b) $r = 8$ $s = 20$ $\theta = \frac{5}{2}$

7. Find the value of the six trig ratios given a point on the terminal side of the angle.

a) $(12, 5)$ $x=12$ $y=5$ $r=13$

$$\sin \theta = \frac{5}{13}$$

$$\cos \theta = \frac{12}{13}$$

$$\tan \theta = \frac{5}{12}$$

$$\csc \theta = \frac{13}{5}$$

$$\sec \theta = \frac{13}{12}$$

$$\cot \theta = \frac{12}{5}$$

b) $(-2, 7)$ $x=-2$ $y=7$ $r=\sqrt{53}$

$$\sin \theta = \frac{7\sqrt{53}}{53}$$

$$\cos \theta = \frac{-2\sqrt{53}}{53}$$

$$\tan \theta = -\frac{7}{2}$$

$$\csc \theta = \frac{\sqrt{53}}{7}$$

$$\sec \theta = -\frac{\sqrt{53}}{2}$$

$$\cot \theta = -\frac{2}{7}$$

8. Find the following without the use of a calculator or table. Use both degrees and radians.

a) $\arcsin\left(\frac{1}{2}\right)$

$30^\circ, \frac{\pi}{6}$

b) $\tan^{-1}(\sqrt{3})$

$60^\circ, \frac{\pi}{3}$

c) $\arccos\left(\frac{\sqrt{2}}{2}\right)$

$45^\circ, \frac{\pi}{4}$

d) $\csc^{-1}(2)$

$30^\circ, \frac{\pi}{6}$

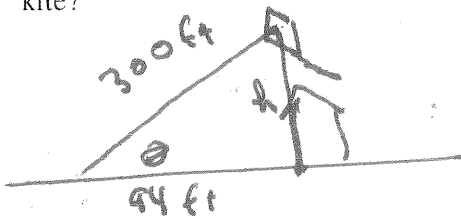
e) $\arctan(-1)$

$-45^\circ, \frac{\pi}{4}$

f) $\arccos\left(-\frac{\sqrt{3}}{2}\right)$

$150^\circ, 5\frac{\pi}{6}$

9. Suzy is flying a kite. She has all 300 ft of string out. She is standing 94 ft from her house and the kite is directly above her house. What is the angle of elevation of the kite string and how far above her house is the kite?



$R = 284.89 \text{ ft}$

$\theta = 71.74^\circ$

10. Find the area of the following triangles.

a) $a=9$ $c=11$ $B=62^\circ$

43.71 units sq

b) $a=24$ $b=20$ $c=18$

176.16 units sq

11. Solve the following triangles.

a) $a=17$ $b=15$ $c=9$

$A = 86.39^\circ$

$B = 61.72^\circ$

$C = 31.89^\circ$

b) $A=52^\circ$ $a=20$ $c=23$

$B = 63.01^\circ, 12.99^\circ$

$C = 64.99^\circ, 115.01^\circ$

$b = 22.62, 5.71$