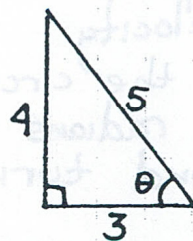
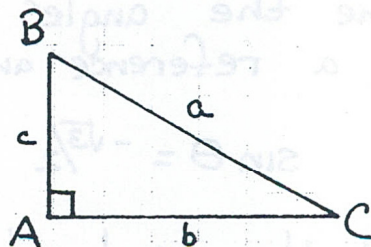


1. $\sin \theta =$
 $\cos \theta =$
 $\tan \theta =$



2. $m\angle C = 32^\circ$
 $\overline{BC} = 27 \text{ ft}$
 $b = \underline{\hspace{2cm}}$



3. $m\angle B = 71^\circ$
 $b = 80''$
 $c = \underline{\hspace{2cm}}$

4. $b = 8, c = 7, m\angle B = \underline{\hspace{2cm}}$

5. A pilot in a plane at an altitude of 22,000 feet observes that the angle of depression to a nearby airport is 26° . How many miles is the airport from the point on the ground directly below the plane? (Draw a picture)

6. $\frac{9\pi}{5}$ radians = $\underline{\hspace{2cm}}?$ degrees

7. $220^\circ = \underline{\hspace{2cm}}$ radians

8. Solve $3 + 2\sin \theta = 4$ over the domain $0^\circ \leq \theta < 360^\circ$

9. If the terminal side of an angle of t radians in standard position passes through the point $(-2, 3)$, then $\cos t = \underline{\hspace{2cm}}?$ and t in radians.

10. Give the exact value of each:

a. $\cos(3\pi/4)$

b. $\sin(-7\pi/4)$

c. $\sec 390^\circ$

11. Give the exact value for:

$\cos \frac{3\pi}{4} \sin \frac{5\pi}{6} - \sin \frac{3\pi}{4} \cos \frac{5\pi}{6}$

12. A merry-go-round makes 8 revolutions per minute.
 - a. How many radians per minute is this?
 - b. At a point 12 feet from the center, find the linear velocity in feet per second. You will need to know the circumference and $v = d/t$.
13. How many radians does the second hand move over a 40 second turn? How many degrees?
14. Name the angles in the 2nd, 3rd, & 4th quadrants with a reference angle of 30° .
15. If $\sin \theta = -\sqrt{3}/2$ and $180^\circ \leq \theta \leq 270^\circ$, then $\cos \theta = ?$
16. Find the exact value of $\cos(120^\circ) \cos 180^\circ + \sin(120^\circ) \sin 180^\circ$
17. Simplify: $\frac{\sin^2 t - \cos^2 t \cdot \sin^2 t}{\sin^2 t}$ into $\sin^2 t$
18. Show that $\frac{\sin t}{\tan t}$ can be transformed into $\cos t$.
19. If $\tan \theta = \frac{4}{5}$ and $180^\circ \leq \theta \leq 270^\circ$, then $\cos \theta = \underline{\hspace{1cm}}$
20. A guy wire stretches from the top of an antenna tower to a point on level ground 18 feet from the base of the tower. The angle between the wire and the ground is 63° . How high is the tower?

Bonus

Two points on level ground are 500 meters apart. The angles of elevation from these points to the top of a nearby hill are 52° and 67° , respectively. The two points and the ground level point directly below the top of the hill lie on a straight line. How high is the hill?