Sample exam 1

You will be expected to do 2 – 15 without a calculator.

(2) Find the remaining side of a $30° - 60° - 90°$ triangle if the side opposite $60°$ is 9.

(3) Find the remaining sides of a $45° - 45° - 90°$ triangle if the longest side is 18.

(5) Multiply.

$$(\cos\theta + \sin\theta)^2$$

(6) Multiply.

$$(1+\cot\theta)(1-\cot\theta)$$

(7) Add or subtract as indicated. Then simplify your answer if possible. Leave the answer in terms of $\sin\theta$ and/or $\cos\theta$.

$$\sin\theta - \frac{1}{\cos\theta}$$

(8) Write the following in terms of $\sin\theta$ and $\cos\theta$ and then simplify if possible.

$$\sec\theta - \tan\theta\sin\theta$$

(9) Write the following in terms of $\sin\theta$ and $\cos\theta$ and then simplify if possible.

$$\frac{\sec\theta}{\tan\theta}$$

(10) Find the exact value or $\sec 315°$

(11) Find the exact value of $\cot 60°$

(12)Find the exact value of $\cos 150°$

(13) Give the exact value of $\sec\frac{5\pi}{4}$

(15) Know the sine, cosine, and tangent values at all the quadrantal angles.

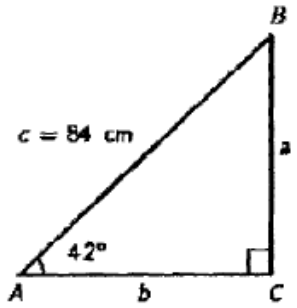
Sample exam 1

The remainder of the problems will allow you to use a calculator.

(16) Change the following to decimal degrees. If rounding is necessary, round to the nearest hundredth of a degree.

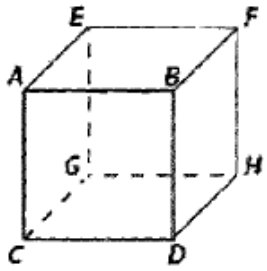
$44°39'$

(17) Refer to the triangle ABC with $C = 90°$.



If $A = 42°$ and $c = 84$ cm, find b.

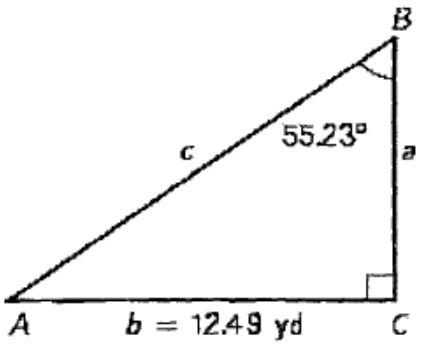
(18) Suppose each edge of the cube shown in the figure is 5 inches long.



Find the measure of the angle formed by diagonal CF and edge CD.

Sample exam 1

(19) Refer to the triangle ABC with $C = 90°$



If $B = 55.23°$ and $b = 12.49$ yd, find a.

(20) A tree on one side of a river is due west of a rock on the other side of the river. From a stake 21 yards north of the rock, the bearing of the tree is $S18.5°W$. How far is it from the rock to the river? Round your answer to the nearest tenth.

(21) A ship is anchored off a long shore a long straight shoreline that runs north and south. From two observation points 15 miles apart on shore, the bearings of the ship are $N31°E$ and $S53°E$. What is the shortest distance from the ship to the shore?

(22) A bullet is fired into the air with an initial velocity of 2,000 feet per second at an angle of $30°$ from the horizontal. Find the horizontal and vertical components of the velocity. Round your answer to the nearest tenth.

(23) Section 2.5 problem 35

(24) Use a calculator to find θ to the nearest tenth of a degree, if $0° < \theta < 360°$ and

$\sec\theta = -3.4170$ with θ in QII.

(25) θ is a central angle that cuts off an arc of length s. Find the radius of the circle if $\theta = 10, s = 5\,ft$.

(26) Find the area of the sector formed by central angle $\theta = 2.7$ in a circle with radius $r = 6$ inches.

(27)A light truck with manual transmission has a circular brake drum with a diameter of 323 millimeters. Each brake pad, which presses against the drum, is 308 millimeters long. What central angle is subtended by one of the brake pads?

(28) The pendulum on a grandfather clock swings from side to side once every second. If the length of the pendulum is 4 feet and the angle through which it swings is $23°$, how far does the tip of the pendulum travel in 1 second?

(29) An arc of length 3 feet is cut off by a central angle of $\frac{\pi}{4}$ radians. Find the area of the sector formed.

(30)A mixing blade on a food processor extends out 3 inches from its center. If the blade is turning at 600 revolutions per minute, what is the linear velocity of the tip of the blade in feet per minute?