Determine the quadrant in which each angle lies.

1. 11π/8
2. 257° 19’ 42”
3. -45°

Determine two co-terminal angles (one positive and one negative) for the given angle.

1. π/6
2. 2π/3
3. -40°

Rewrite each angle in degree measure.

1. 7π/3
2. -7π/12

Rewrite each angle in radian measure as a multiple of π.

1. 20°
2. 330°

Complete the following conversions rounding to 3 decimal places.

1. Convert 345° to radians.
2. Convert π/9 to degrees.
3. Convert -408° 16’ 20” to decimal degrees.
4. Convert 3.58° to D°M’S”.

Calculate the following using the formula θ=s/r.

1. Find the radian measure of the central angle of a circle of radius 14.5cm that intercepts an arc of length 25cm.
2. Find the length of the arc on a circle with a radius of 11 meters intercepted by a central angle of 120°.
3. Find the distance between two cities of the given latitudes. Assume that the earth is a sphere of radius 4000 miles and that the cities are on the same meridian.

Dallas 32°47’9”

Omaha 41°15’42”

Determine the six trigonometric functions using the information below.

1. x = –12, r= 17, P(–12, y), is in the 2nd quadrant.
2. Given point P (–3, 8) on the terminal side of an angle θ in standard position.
3. Given sin θ = -3/5 and cot θ < 0.

Using knowledge of the unit circle, determine the following.

1. Cos (π/3) =
2. Tan (225°)=
3. Csc (7π/6)=
4. Sin (5π/4)=
5. Sec (90°)=

Using right triangle trigonometry, solve the following real-world problems.

1. From a point 384 ft in a horizontal line from the base of a building, the angle of elevation to the top of the building is 36°. How tall is the building?
2. A cell-phone tower is 380 ft tall. A guy wire runs from the top of the tower to the ground at a location of 138 ft from the base of the tower. What is degree measure of the angle made between the wire and the ground?
3. The elevation above sea level at the entrance to a mine is 1600 ft. The mine shaft descends in a straight line for 300 ft at an angle of depression of 24°. Find the elevation of the bottom of the mine shaft above sea level.
4. A piece of land slopes at an angle of 3° and runs for 280 ft in the direction of the slope. In order to level the land, a retaining wall is to be built at the lower end of the property so that fill-dirt can level the property. How high must the wall be?
5. While enjoying a walk through Central Park this past weekend, I spotted a lion hunting a zebra (Yes, this really happened). Calculate the distance between these animals.

8°

Zebra

Lion

20°

100 ft

Mr. E

