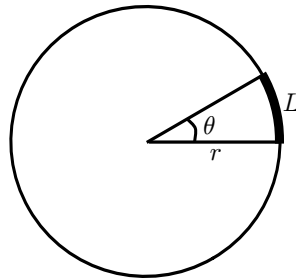


Homework 3

1. Convert 192° to radians. Give your answer as a fraction involving π .

2. Convert $\frac{5\pi}{12}$ radians to degrees.

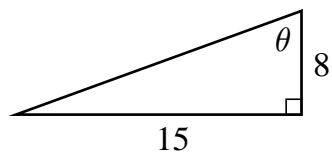
3. In the following circle, r is the radius of the circle, θ is the indicated angle, and L is the length of the corresponding arc of the circle.



If $\theta = 45^\circ$ and $r = 5$, what is L ?

4. The radius of a wheel rolling on the ground is 80 centimeters. If the wheel rotates through an angle of 60° , how many centimeters does it move? Express your answer in terms of π .

5. Consider the following right triangle:



(a) What is $\sin \theta$?

(d) What is $\sec \theta$?

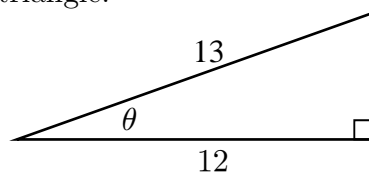
(b) What is $\cos \theta$?

(e) What is $\csc \theta$?

(c) What is $\tan \theta$?

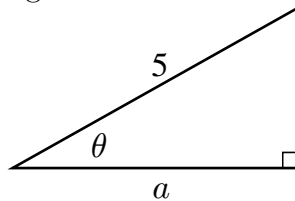
(f) What is $\cot \theta$?

6. Consider the following right triangle:



Determine the value of θ measured in radians.

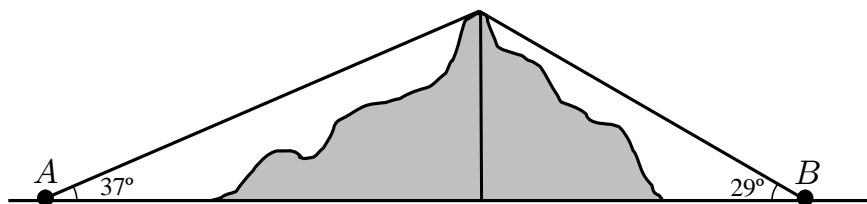
7. Consider the following right triangle:



(a) If $\theta = \frac{\pi}{3}$ radians, what is a ?

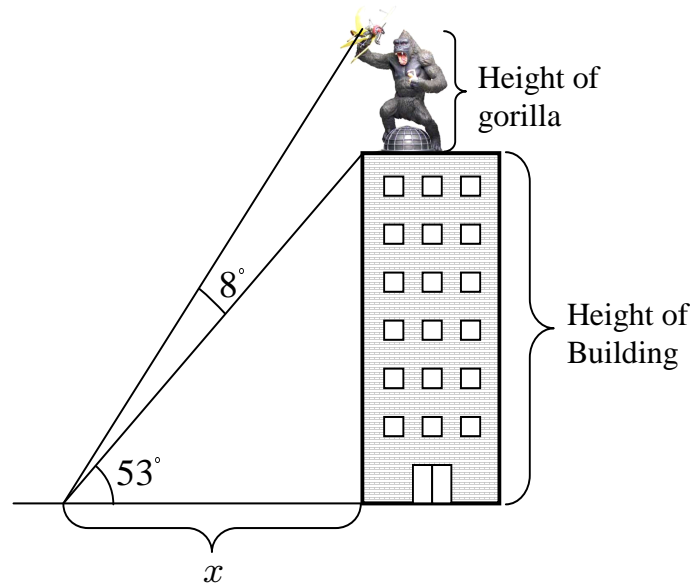
(b) If $a = 4$, what is θ ? Give your answer in radians.

8. A mountain is between two cities A and B as shown in the following picture:



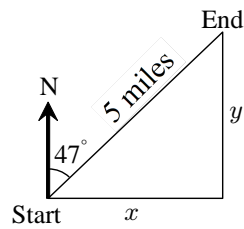
If the mountain is one mile high, determine the distance between the two cities.

9. King Kong is on top of a building as in the following picture:



If King Kong is 20 ft. tall, determine the height of the building.

10. John and Sally begin at the same location. John walks 5 miles at a bearing of N 47° E. Sally walks x miles East followed by y miles North, and ends at the same place as John. Determine the values of x and y .



11. Ben walks due North for 2.3 miles. Then, he turns 54° degrees clockwise and walks for 1.8 miles. How far is he from where he started? (*Hint*: First determine how far North and East he has traveled; then use the Pythagorean theorem.)

