

Math 112
Exam 1 Review

6.1 Angles and their Measure

Equations:

- 1) Be able to convert angle measures from degrees to radians and from radians to degrees.
- 2) Know the formulas for arc length, angular speed and linear speed of rotating object

Example Problems:

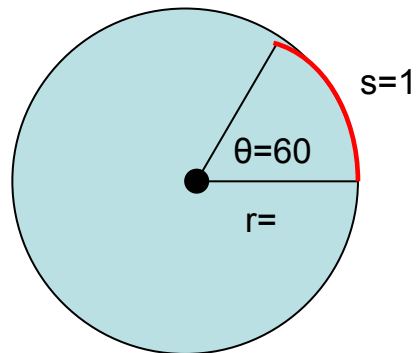
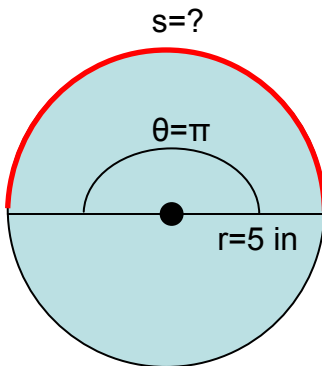
- 1) convert each angle from degree measure to radian measure:

a) -120° b) 25° c) 45° d) 380°

- 2) Covert each angle from radian measure to degree measure:

a) 3π b) 3 c) $.5\pi$ d) $3/2 \pi$

- 3) Determine the missing value in the figure:



- 4) The earth rotates 1 complete revolution every 24 hours has an approximate radius of 3955 miles.

- a) Find the angular velocity of a person standing at the equator in radians per hour.
- b) Estimate the linear speed in miles per hour at the equator due to the earths rotation.

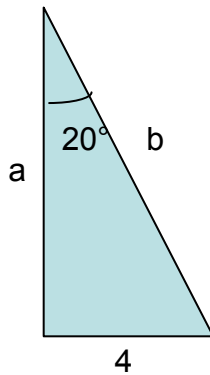
6.2 Right Triangle Trigonometry:

Equations: You should know the definition of the six trigonometric functions for an acute angle. (pg 491)

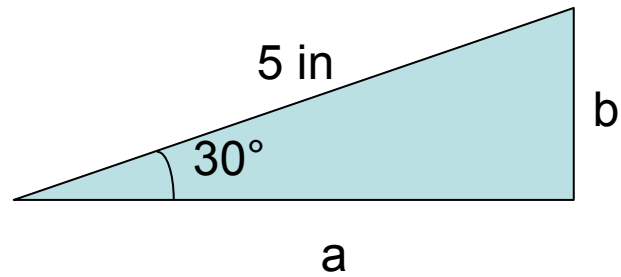
Example Problems:

- 1) Find the lengths of the unknown sides of the right triangle. (round values to the nearest hundredth)

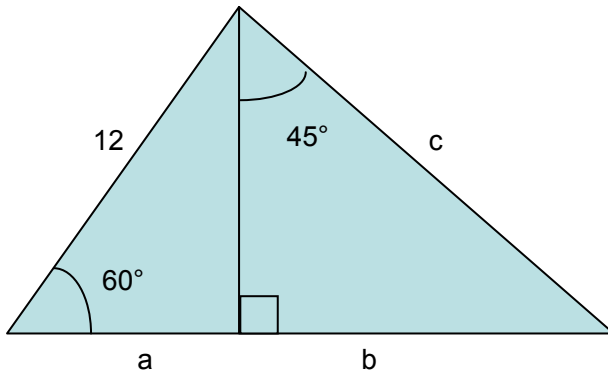
a)



b)



c)



- 2) One hundred feet from the trunk of a tree on level ground, the angle of elevation of the top of the tree is 35° . Estimate the height of the tree to the nearest foot.

6.3 The sine and Cosine functions and their Graphs

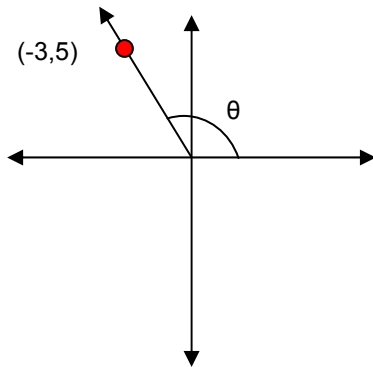
Equations/ Definitions:

- 1) You should know the definition of the sine and cosine functions for an arbitrary angle. (pg 504)
- 2) You should know the first quadrant of the unit circle and be able to generate the entire unit circle

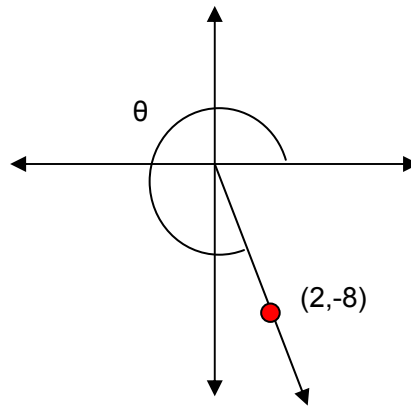
Example problems:

- 1) Find $\sin\theta$ and $\cos\theta$ for the following graphs. (round to the nearest hundredth)

a)



b)



- 2) Give the exact values of :

a) $\sin 45^\circ$ b) $\sin -45^\circ$ c) $\sin 120^\circ$ d) $\cos 30^\circ$ e) $\cos 180^\circ$ f) $\cos -120^\circ$

- 3) state the domain and range for the following functions:

a) $f(x)=2\cos(x)$

b) $f(x)= -3\cos(x)$

c) $g(x)=3\sin(2x)$

6.4 Other trigonometric functions and their graphs:

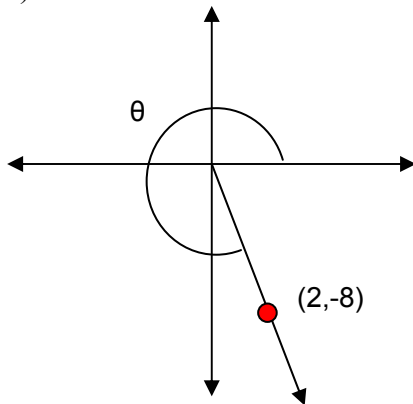
Equations/ Definitions:

- 1) You should know the definition of the six trigonometric functions for an arbitrary angle. (pg 504)
- 2) You should know the reciprocal , quotient , and Pythagorean identity.
- 3) You should know the graphs of the \tan , \cot , \sec , and \csc functions and be able to state their domain and range.

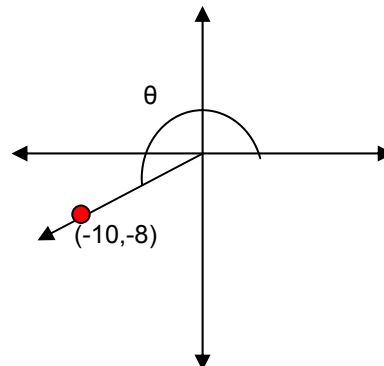
Example Problems:

- 1) find the six trigonometric functions of θ .

a)



b)



- 2) Determine the values of the six trigonometric functions of θ by using the given information.

a) $\csc\theta = -17/15$
 $\sec\theta = -17/8$

b) $\cos\theta = 7/15$
 $\sin\theta > 0$

- 3) Give the exact values of :

a) $\csc 45^\circ$ b) $\tan -45^\circ$ c) $\sec 120^\circ$ d) $\cot 30^\circ$ e) $\tan 180^\circ$ f) $\csc -120^\circ$

6.5 Graphing Trigonometric Functions:

Equations/ Definitions:

- 1) Know and understand the meaning of the parameters for the standard sin and cos functions (pg.535)

Example Problems:

- 1) Find the amplitude, period and phase shift and horizontal shift of f. Then sketch a full period of the function.

a) $f(x) = 2\sin\left(\frac{1}{2}(x - \pi)\right) + 1$

b) $f(x) = -\cos\left(\frac{1}{2}x - \pi\right)$

c) $f(x) = 3\sin\left(\frac{1}{2}\left(x + \frac{\pi}{2}\right)\right) - 1$

- 2) Find the equation $f(x) = a\sin(b(x - c)) + d$ for the following graph

