Name: _____   Precalculus Unit 9, Lesson 1

Aim: Trigonometry Prerequisites

I. Do Now:
1. Find the value of x and y.

(triangle with legs 1, 1 and hypotenuse x; triangle with sides 2, 1 and y)
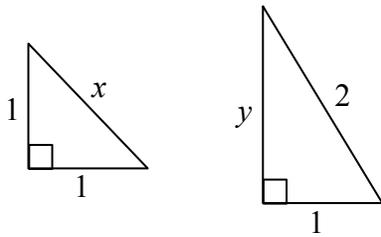
2. Recall the following definitions:
Unit Circle: the circle of radius 1 centered at the origin

Standard Position: An angle is in standard position if its initial side is along the positive x-axis and its vertex is at the origin. Positive angles are generated by rotating the terminal side counterclockwise and negative angles are generated by rotating the terminal side clockwise.

Draw angles of 45° and −315° in standard position. How are these angles related? _____

II. The Six Trigonometric Functions of an Angle:

$\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$ $\csc\theta = \frac{\text{hypotenuse}}{\text{opposite}}$

$\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$ $\sec\theta = \frac{\text{hypotenuse}}{\text{adjacent}}$

$\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$ $\cot\theta = \frac{\text{adjacent}}{\text{opposite}}$

3. In $\triangle ABC$ with hypotenuse $BC = 7$ and $AB = 4$. Find the exact values of all six trigonometric functions of angle B.

III. Definition of a Radian:
One radian is the measure of a central angle θ that intercepts an arc s equal in length to the radius r of the circle.
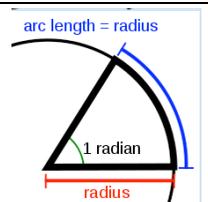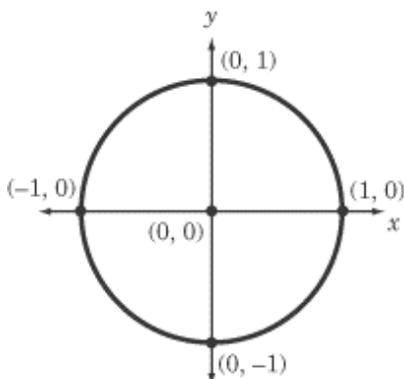
π radians $= 180°$

2π radians $= 360°$ (1 full revolution)

To convert:
i) from radians to degrees: multiply by $\frac{180°}{\pi}$
ii) from degrees to radians: multiply by $\frac{\pi}{180°}$
$r = 1$

4. Convert from degrees to radians
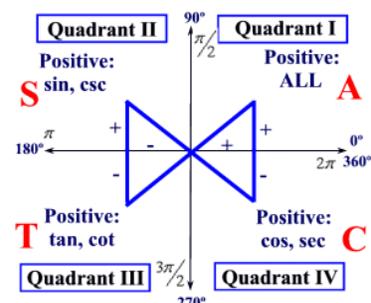(a) 45° (b) 270° (c) −150°

5. Convert from radians to degrees:
(a) $\frac{2\pi}{3}$ (b) $\frac{11\pi}{6}$ (c) $\frac{15\pi}{4}$

IV. Trigonometric Functions on the Unit Circle:

(unit circle with points (0,1), (−1,0), (1,0), (0,0), (0,−1))

Quadrantal Angles: angles that terminate on an axis (multiples of 90°)

Reference Angle: the acute angle formed by the terminal side of an angle and the x-axis.

(ASTC diagram)

6. Find the reference angle for each angle:
(a) 100° (e) $\frac{2\pi}{3}$
(b) 650° (f) $\frac{11\pi}{6}$
(c) 405° (g) $-\frac{5\pi}{4}$
(d) −500° (g) $\frac{17\pi}{6}$

HW17
Read pages 254 – 259.
p. 261: 13b, 15a, 16ab, 22a, 24b, 25a, 26a, 47ab, 50ab, 51ab
p. 280: 11, 13, 18, 75
p. 290: 59, 60, 61