

Lesson 55

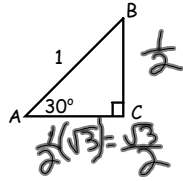
Aim: What is the unit circle and value of angles in quadrants?

HW: Read pages 362 - 366
On page 366 # 4,5,6,7,11 to 14,17,22,23

Day 2 HW: p.372 # 6,8,14,16,18,20,22,24,26,27

Do Now:

- 1) Find in simplest radical form AC and BC
- 2) Find the Exact Value (NOT a DECIMAL!) of Sin A, Cos A and Tan A



$$\sin A = \frac{1}{2} = \frac{1}{2}$$

$$\cos A = \frac{\frac{1}{2}\sqrt{3}}{1} = \frac{\sqrt{3}}{2}$$

$$\tan = \frac{1}{\frac{\sqrt{3}}{2}} = \frac{2}{\sqrt{3}}$$

$$\frac{1}{2} \div \frac{\sqrt{3}}{2} = \frac{1}{2} \times \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}}$$

$$\frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\sin \frac{16}{20} = \frac{4}{5} = .8$$

$$\cos \frac{12}{20} = \frac{16}{20} = \frac{4}{5} = .8$$

$$\tan \frac{16}{12} = \frac{4}{3} = 1.33$$

Page 361 4,6, 7-17,18,20,23,25,32
357 # 14,16

4. Same as 180°
6. Same as 240°
7. In quadrant II
9. II
12. IV
15. IV
18. 30°
25. 180°
8. I
10. III
13. II
16. I
20. 280°
32. 12.5
11. IV
14. I
17. IV
23. 90°

page 357 # 14,16

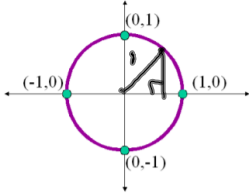
14. $\sin = \frac{4}{5}, \cos = \frac{3}{5}, \tan = \frac{4}{3}$
16. $\sin = \frac{5}{13}, \cos = \frac{12}{13}, \tan = \frac{5}{12}$

A circle with center at (0, 0) and radius 1 is called a unit circle.

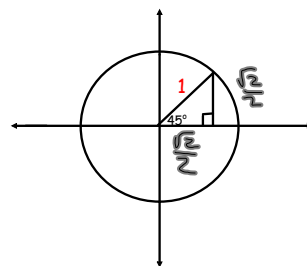
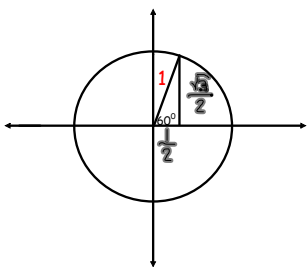
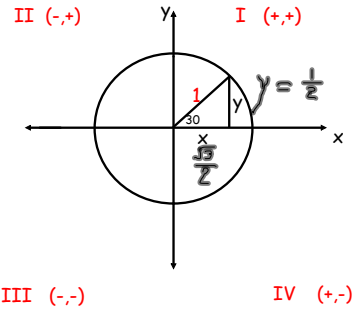
Remember the equation of this circle would be

$$x^2 + y^2 = 1$$

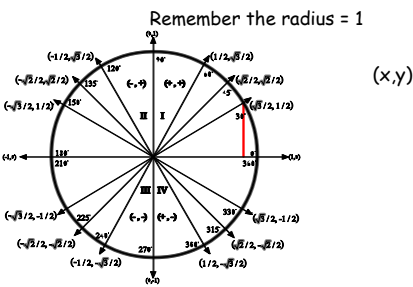
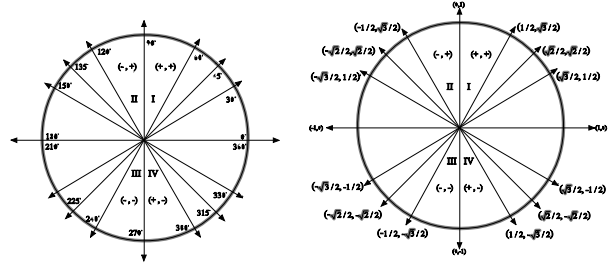
Unit Circle



So points on this circle must satisfy this equation.

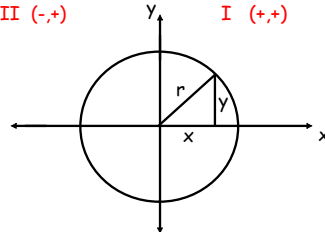


Function	30	45	60
Sin	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
Cos	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
Tan	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$



In general, the horizontal side of a triangle is x, the vertical side of a triangle is y and the hypotenuse is r (radius)

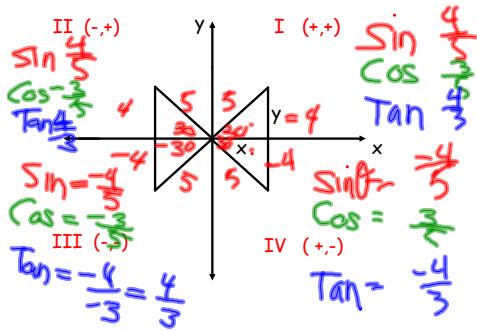
II (-,+) I (+,+)



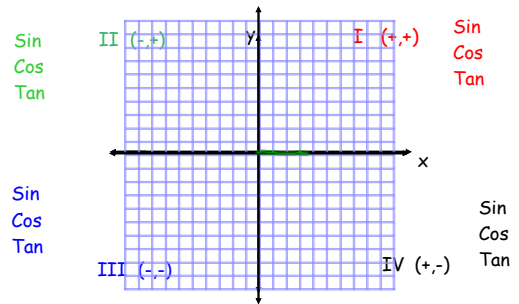
opposite

hypotenuse

adjacent



A point on the terminal side of an acute angle is $(4,3)$



We can use the saying

All Students Take Classes to remember **ASTC**.

Which reminds us that:

In quadrant I All three functions are positive,

In quadrant II Sine is positive

In quadrant III Tangent is positive

In quadrant IV Cosine is positive



Determine the signs of the following functions:

a) $\sin 30$

b) $\sin 200$

c) $\sin 140$

d) $\cos 225$

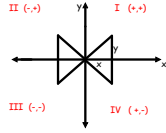
e) $\cos 345$

f) $\cos 195$

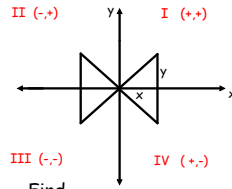
g) $\tan 200$

h) $\tan 300$

Find the correct quadrant when:



- a) $\cos \theta > 0$
- b) $\cos \theta < 0$
- c) $\sin \theta > 0$ and $\cos \theta > 0$
- d) $\sin \theta < 0$ and $\cos \theta < 0$
- e) $\sin \theta > 0$ and $\cos \theta < 0$
- f) $\cos \theta > 0$ and $\tan \theta < 0$
- g) $\tan \theta > 0$ and $\sin \theta < 0$



Find
a. y coordinate $(-6/10, y)$

- b. $\cos \theta$
- c. $\sin \theta$
- d. $\tan \theta$