# The Unit Circle

April-17-19
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A. Special Right Triangles Review

The other day we looked at 3 Special Triangles and the unique ratios of the sides.
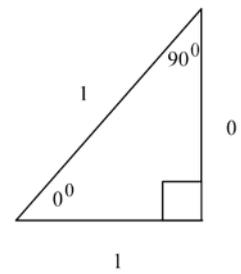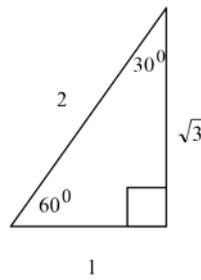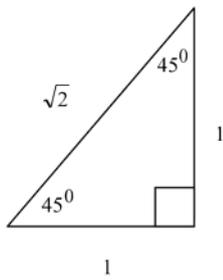
If we consider the triangles above, but use a hypotenuse length of one unit, then we would get the following triangles.

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

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

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

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

$$\frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$
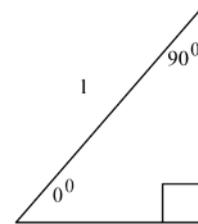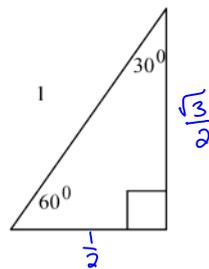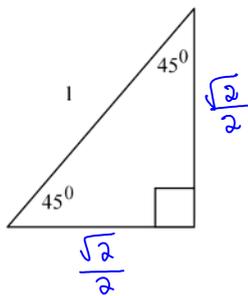
Same as original

## B. The Unit Circle

The Unit Circle is formed by creating a circle where the outside edges of the circle are located one unit from the origin. The Special Triangles are then reflected over both the x & y axes. This allows us to find specific coordinates and exact trigonometric ratios for these special angles within the circle.

✳ *The coordinates of the unit circle are based on the adjacent and opposite sides of the special triangles. The hypotenuse will always be one!*
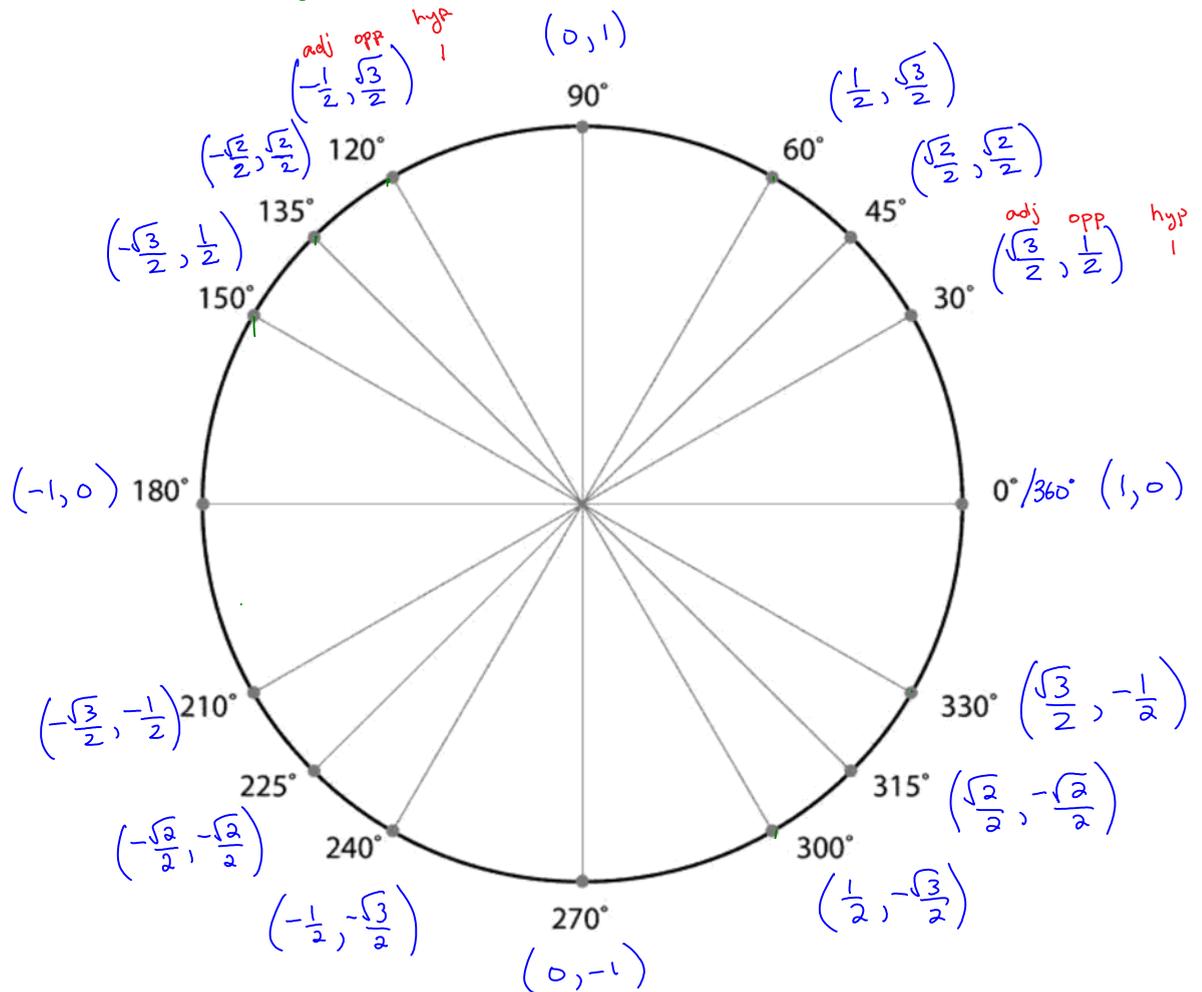
Assignment: Unit Circle Assignment #1 – 16

Use the Unit Circle and your knowledge of Special Triangles to determine the exact values for the following trigonometric functions.

1. $Cos30^0$

2. $Tan90^0$

3. $Cos60^0$

4. $Tan45^0$

5. $Cos150^0$

6. $Tan120^0$

7. $Sin300^0$

8. $Cos300^0$

9. $Tan330^0$

10. $Cos270^0$

11. $Tan180^0$

12. $Sin135^0$

13. $Sin315^0$

14. $Tan225^0$

15. $Tan210^0$

16. $Tan270^0$

<u>Answers</u>

1. $\dfrac{\sqrt{3}}{2}$ 2. *Undefined*   3. $\dfrac{1}{2}$ 4. 1

5. $-\dfrac{\sqrt{3}}{2}$ 6. $-\sqrt{3}$ 7. $-\dfrac{\sqrt{3}}{2}$ 8. $\dfrac{1}{2}$

9. $-\dfrac{\sqrt{3}}{3}$ 10. 0   11. 0   12. $\dfrac{\sqrt{2}}{2}$

13. $-\dfrac{\sqrt{2}}{2}$ 14. 1   15. $\dfrac{\sqrt{3}}{3}$ 16. *Undefined*