Recruiting, Retaining and Rewarding Top Tier Teachers

Top Teacher Test Prep

# Math Principles

## Trigonometry

## FOR ACT ONLY

# Trigonometry

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- How do you find the **SINE, COSINE, AND TANGENT OF ACUTE ANGLES?**

- To find the sine, cosine, or tangent of an acute angle, use **SOH CAH TOA,** which is an abbreviation for the following definitions:

$$\text{Sine} = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\text{Cosine} = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\text{Tangent} = \frac{\text{opposite}}{\text{adjacent}}$$

# Trigonometry

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- How do you find the **COTANGENT, SECANT, AND COSECANT OF ACUTE ANGLES?**

- Think of the cotangent, secant, and cosecant as the reciprocals of the SOH CAH TOA functions

$$\text{Cosecant} = \frac{\text{hypotenuse}}{\text{opposite}}$$

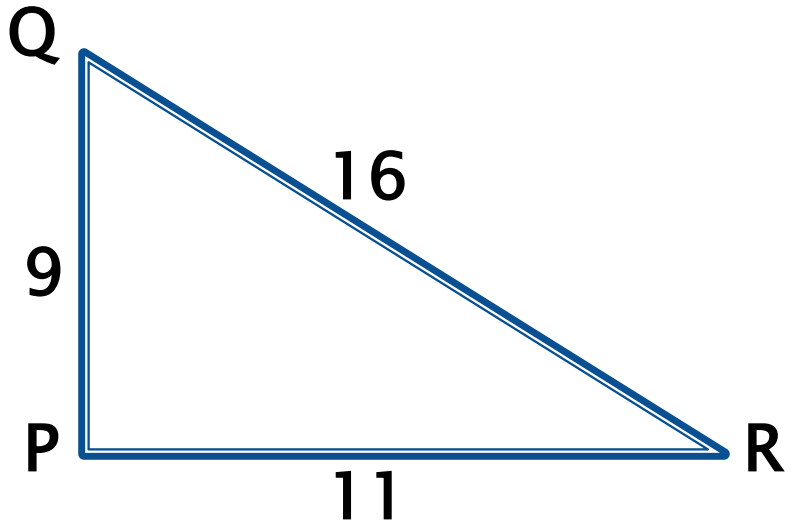
$$\text{Secant} = \frac{\text{hypotenuse}}{\text{adjacent}}$$

$$\text{CoTangent} = \frac{\text{adjacent}}{\text{opposite}}$$

# Trigonometry



- Based on the triangle to the right




- Sin R = 9/16
- Cos R = 11/16
- Tan R = 9/11

- Csc R = 16/9
- Sec R = 16/11
- Cot R = 11/9

# Trigonometry



- How do you do **TRIGONOMETRIC FUNCTIONS OF OTHER ANGLES?**

- To find a trigonometric function of an angle greater than 90°, sketch a circle of radius 1 and centered at the origin of the coordinate grid. Start from the point (1, 0) and rotate the appropriate number of degrees counterclockwise.

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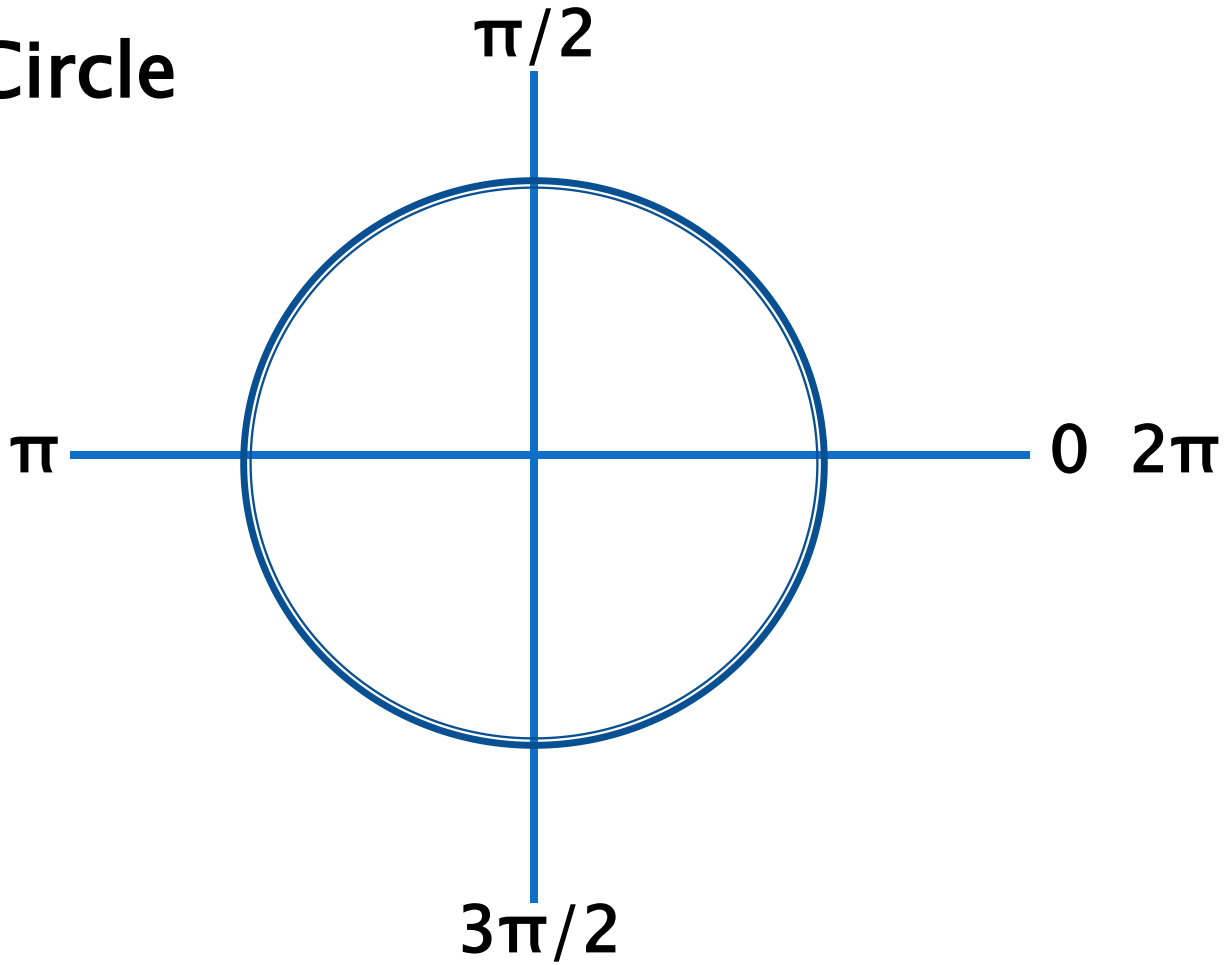
## The Unit Circle



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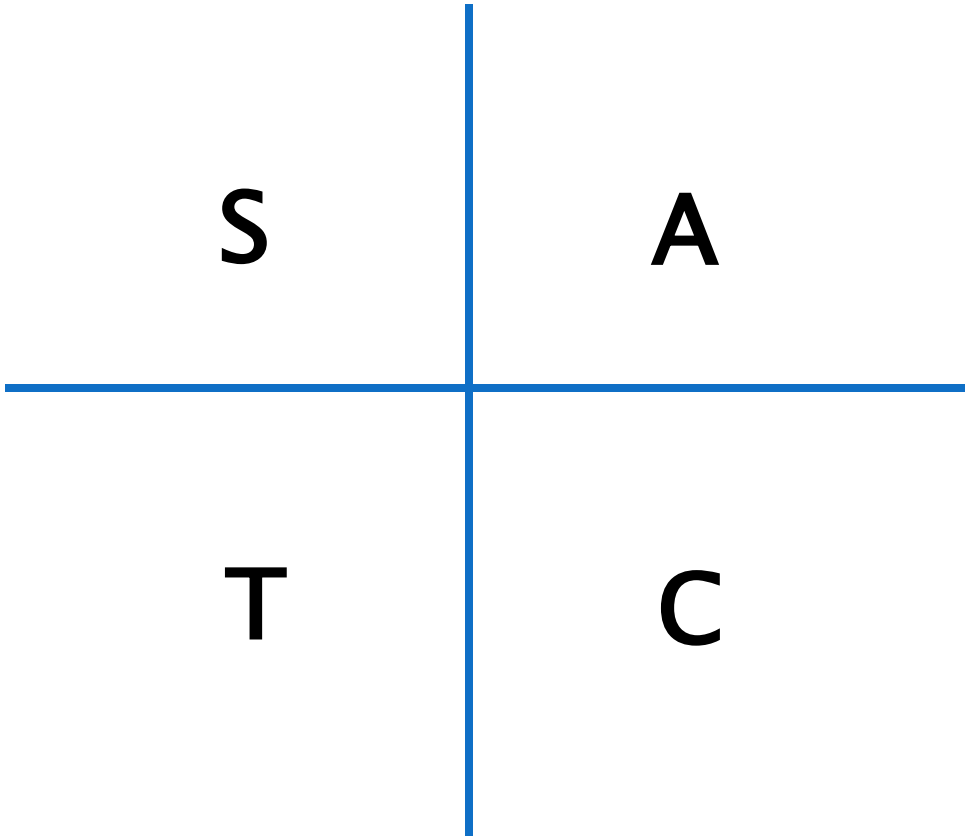
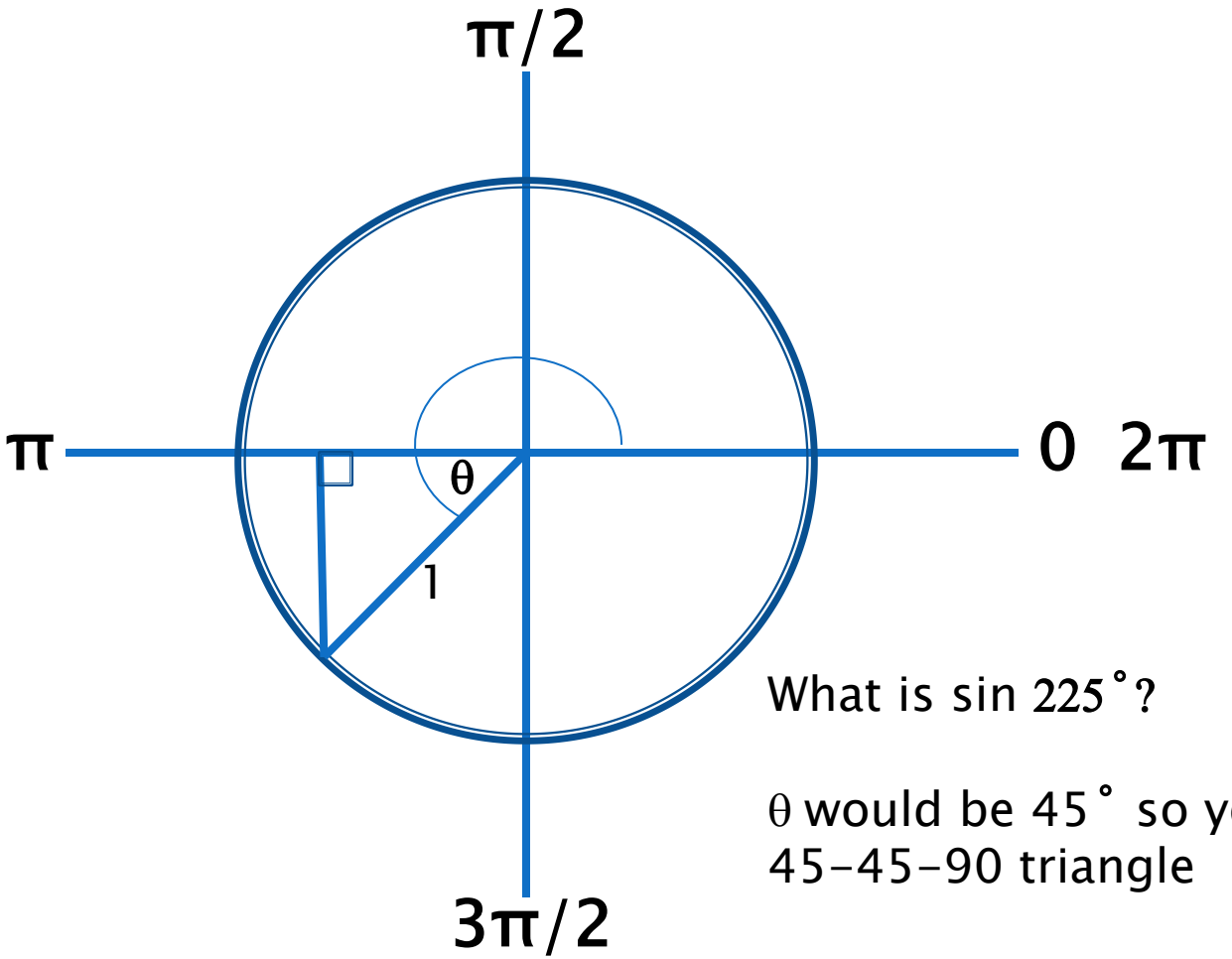
**Remember All Students take Calculus**




**These are the positive trig functions in each quadrant**

# Trigonometry




What is sin 225°?

θ would be 45° so you have a 45-45-90 triangle

sin θ = Op/ Hyp
sin θ = (√2/2) (√2/2) = 1/2

# Trigonometry



- How do you **SIMPLIFY TRIGONOMETRIC EXPRESSIONS?**

- To simplify trigonometric expressions, use the inverse function definitions along with the fundamental trigonometric identity:

- $\sin^2 x + \cos^2 x = 1$

# Trigonometry

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- How do you **SIMPLIFY TRIGONOMETRIC EXPRESSIONS?**
- Remember this College board favorite
- If the sum of two angles is 90° then the sin of one angle will equal the cos of the other

# Trigonometry



- How do you **GRAPH TRIGONOMETRIC FUNCTIONS?**

- To graph trigonometric functions, use the *x-axis* for the angle and the *y-axis for the value of the* trigonometric function. Use special angles—0°, 30°, 45°, 60°, 90°, 120°, 135°, 150°, 180°, etc.—to plot key points.