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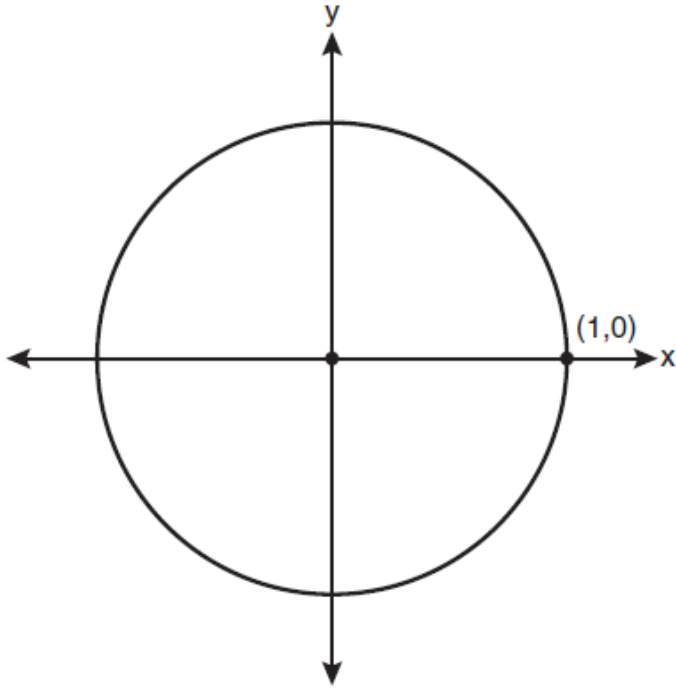
Algebra 2/Trig – Finding the Exact Value with Trig Radicals CLASSWORK

PERIOD: _____

UNIT CIRCLE

WHAT IS THE UNIT CIRCLE?

- A **unit circle** is a circle with a radius of one (a unit radius).
In trigonometry, the unit circle is centered at the origin.
- In the unit circle, the coordinates (x, y) can be rewritten as $(\cos \theta, \sin \theta)$



PRACTICE WITH THE UNIT CIRCLE

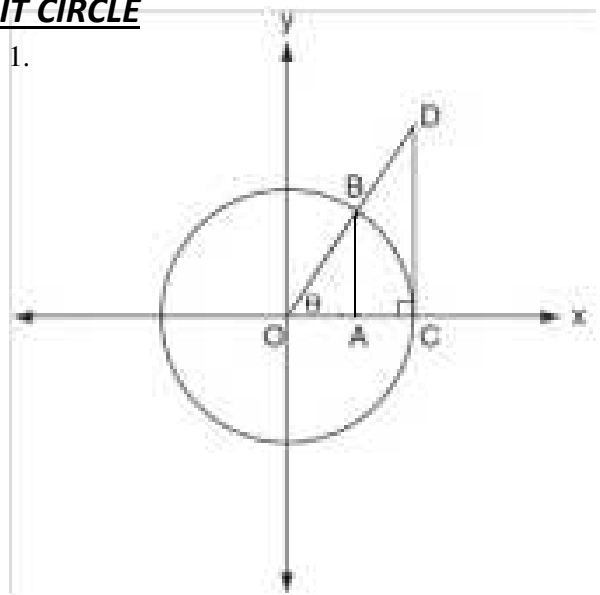
1. The accompanying diagram shows unit circle O , with radius $OB = 1$.

Which line segment has a length equivalent to $\sin \theta$?

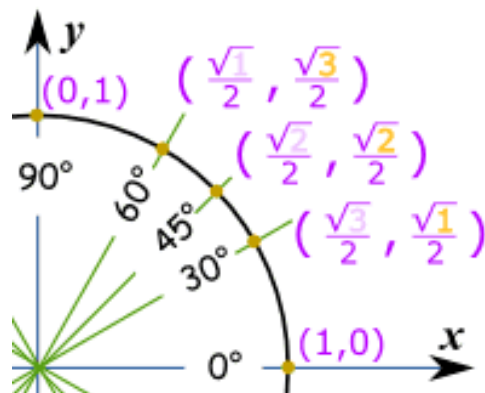
- (1) \overline{OB} (3) \overline{OD}
(2) \overline{CD} (4) \overline{BA}

Which line segment has a length equivalent to $\tan \theta$?

- (1) \overline{OB} (3) \overline{OC}
(2) \overline{CD} (4) \overline{OA}



- THE UNIT CIRCLE IN THE FIRST QUADRANT:



TRIGONOMETRY RADICALS IN THE FIRST QUADRANT (NEEDS TO BE MEMORIZED!!!!)

DIRECTIONS: Express the following solutions as exact values (no decimals).

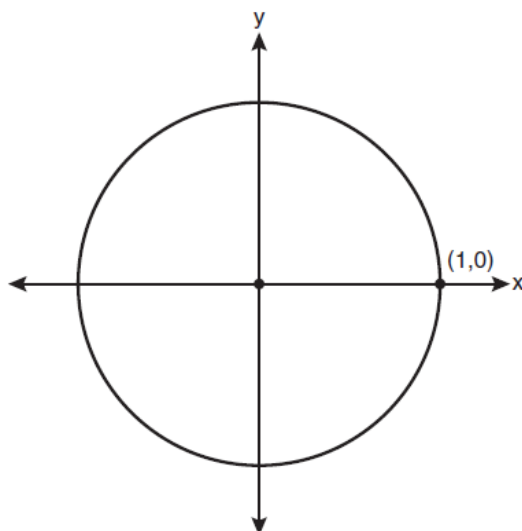
	30°	45°	60°
$\sin \theta$			
$\cos \theta$			
$\tan \theta$			

****LOOK FOR PATTERNS TO HELP YOU MEMORIZE THIS TABLE****

TRIGONOMETRY WITH QUADRANTAL ANGLES (DO NOT NEED TO MEMORIZE)

	0°	90°	180°	270°	360°
$\sin \theta$					
$\cos \theta$					
$\tan \theta$					

****YOU CAN JUST PLUG THESE INTO YOUR CALCULATOR (in degree mode)****



FINDING EXACT VALUE OF TRIGONOMETRY FUNCTIONS

MODEL PROBLEM 1: Find the exact value: $\sin 60^\circ + \cos 0^\circ$

MODEL PROBLEM 2: If $f(\theta) = \tan(2\theta) - \tan \theta$, what is the exact value of $f(30^\circ)$

MODEL PROBLEM 3: What is the exact value of the product $(\tan 30^\circ)(\sin 30^\circ)(\cos 30^\circ)$.

MODEL PROBLEM 4: If $f(x) = \left(\sin \frac{11x}{6}\right) \left(\cos \frac{x}{6}\right)$, what is the exact value of $f(180^\circ)$?

MODEL PROBLEM 5: Find the exact value in simplest form: $\frac{\cos 60^\circ}{\tan 60^\circ}$

UNIT CIRCLE CHALLENGE

In the accompanying diagram of circle O , point O is the origin, $YO = 1$, $JO = 1$, and \overline{TOY} is a diameter.

If the coordinates of point J are $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$, what is the value of θ ? ****Hint: Think about how to rewrite (x, y) ****

