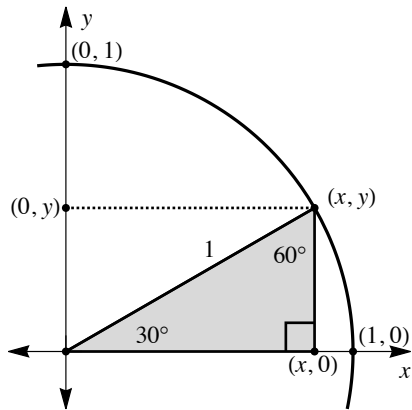
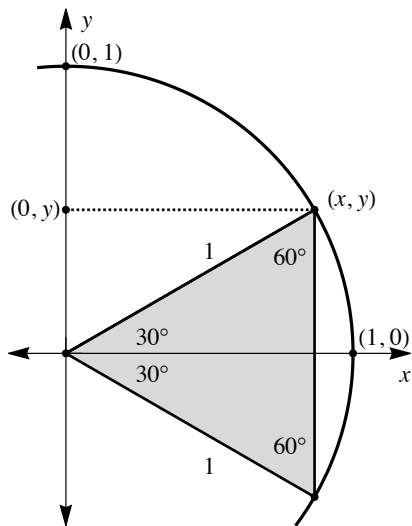


Trigonometry 4: Points on the Unit Circle: $\theta = 30^\circ$

Here is (the first quadrant of the) unit circle with a radial line $\theta = 30^\circ$.



There is no obvious way to use this triangle to solve for the x and y coordinate values; however, if we reflect this triangle across the x -axis, we get:



This is an equilateral triangle where all the side lengths are 1 unit. That means that

$$y = 1/2$$

If we use the Pythagorean Theorem on the original triangle, we can find the corresponding x value:

$$x^2 + (1/2)^2 = 1 \implies x^2 = 3/4 \implies x = \sqrt{3/4} = \sqrt{3}/2$$

When $\theta = 30^\circ$, the corresponding point on the unit circle is $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$:

