

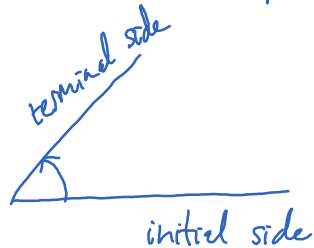
Lecture 12

Monday, April 24, 2023

10:21 AM

* Questions ...

In order to do arithmetic (add, subtract, multiply, divide) on angles, we will "standardize" the position of angles.



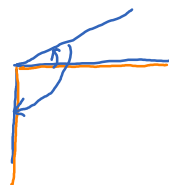
In the standard position, the initial side is always the positive half of the x-axis. The angle now has an orientation: clockwise or counterclockwise. The value of the angle is positive if it is oriented counterclockwise, and negative if it is oriented clockwise.

With the notion of standard position, we can talk about adding/subtracting angles.

Ex $30^\circ + 120^\circ$

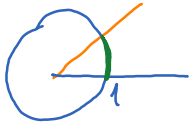


$$30^\circ - 120^\circ$$



To multiply angles, we need to use a different unit.

$$30^\circ \times 15^\circ = 450^{\circ\circ} (??)$$



Each angle determines an arc on the unit circle.

The larger the angle is, the longer the arc.

The length of the arc is called the radian measure of the angle.

$$90^\circ = \frac{1}{4} \text{ round} = \frac{1}{4} \times \text{perimeter of circle} = \frac{1}{4} \times 2\pi(1) = \frac{\pi}{2} \text{ radian}$$

$$180^\circ = \pi \text{ rad}$$

$$360^\circ = 2\pi \text{ rad}$$

$$\theta^\circ = \frac{2\pi\theta}{360} = \frac{\pi}{180} \theta \text{ rad}$$