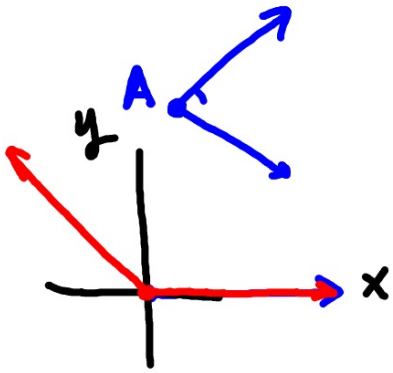
Trig 5.1

Convert measurements between d/m/s and decimals

Find the number of degrees in a given rotation

Identify coterminal angles



angle

vertex

initial side

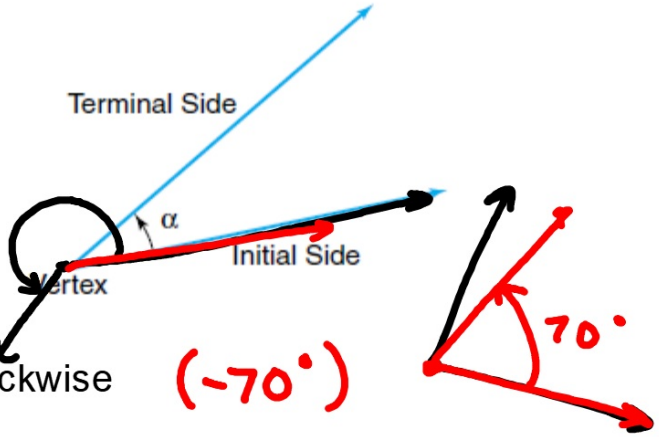
terminal side

standard position

degree

$\frac{1}{360}$ th of circle

vertex @ (0,0)
initial side + x-axis



clockwise (−70°)

* counterclockwise (default)

coterminal angles

quadrantal angle

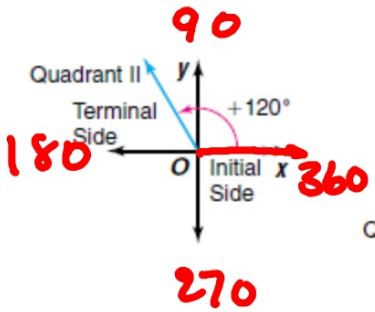
reference angle (to horizontal)

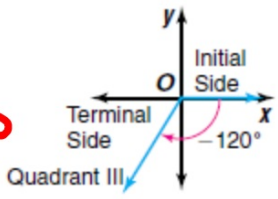
d m s

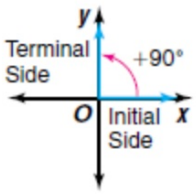
$35° \frac{30}{60} \frac{12}{60}$

$35°30'12''$

activity: plates



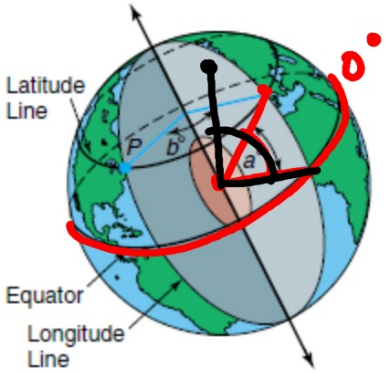




clockwise

* counterclockwise (default)

sec>>min>>degrees



minutes
seconds

15° 44′ 6 ″ N

.735 (60) = 44.1

.1 (60)

1 NAVIGATION Refer to the application at the beginning of the lesson.

a. Change north latitude 15.735° to degrees, minutes, and seconds.

b. Write north latitude 39° 5′ 34″ as a decimal rounded to the nearest thousandth.

60

39.092778

5.5667

39.093° N

60

Latitude 44 (restaurant in SF)

34° 57' 0" −72° 46' 30"

Change each measure to degrees, minutes, and seconds.

5. 34.95° .95(60)

6. −72.775° .775(60) .5(60)

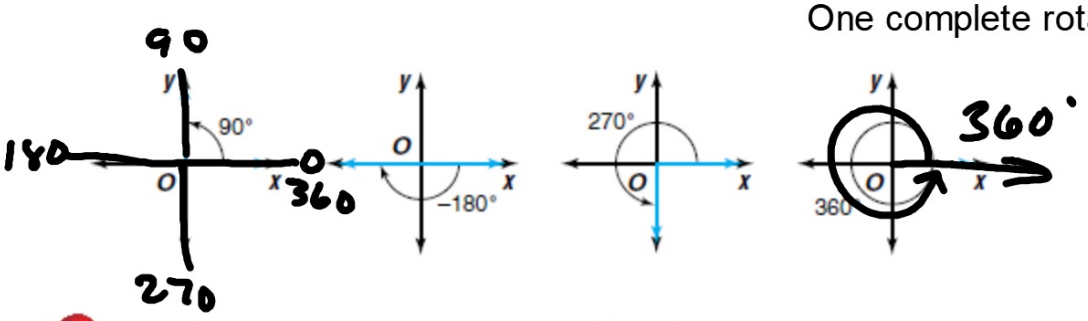
Write each measure as a decimal to the nearest thousandth.

7. −128° 30′ 45″ $\frac{45}{60}$ $\frac{30.75}{60}$

8. 29° 6′ 6″

−128.513°

One complete rotation = 360 degrees



2 **Give the angle measure represented by each rotation.**

a. 5.5 rotations clockwise

$-5.5(360) = -1980$

b. 3.3 rotations counterclockwise

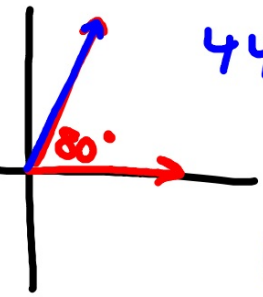
coterminal = same terminal side

3 **Identify all angles that are coterminal with each angle. Then find one positive angle and one negative angle that are coterminal with the angle.**

a. 45°

45°, 405°, 765°

-315°, 1125°, 1485°



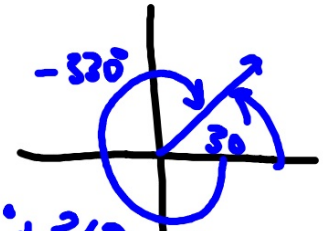
$45° + 360n$ *

(*n is an integer)

b. 225°

585°

-135°



$225° + 360n$ *

Give the angle measure represented by each rotation.

9. 2 rotations clockwise

10. 4.5 rotations counterclockwise

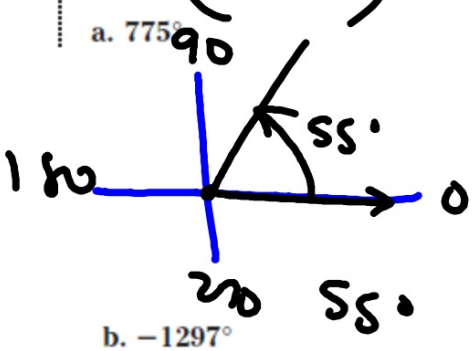
Identify all angles that are coterminal with each angle. Then find one positive angle and one negative angle that are coterminal with each angle.

11. $22°$

12. $-170°$

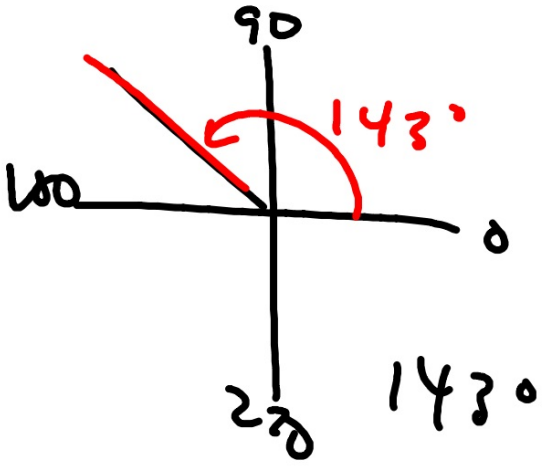
4 If each angle is in standard position, determine a coterminal angle that is between 0° and 360°. State the quadrant in which the terminal side lies.

a. 775°

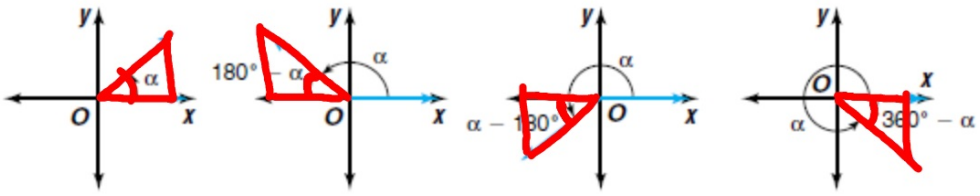


b. −1297°

-217°

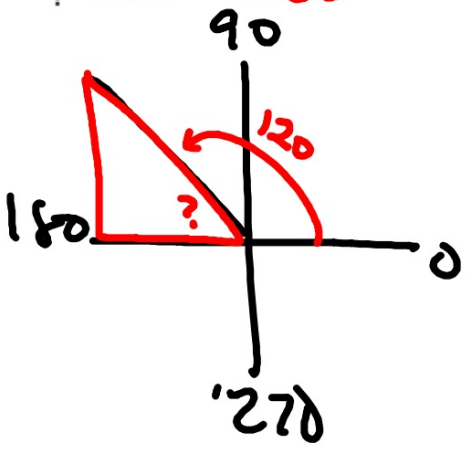


Reference angles...always go to the X axis!

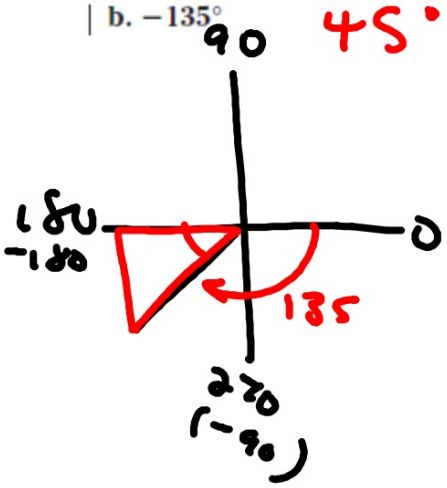


5 Find the measure of the reference angle for each angle.

a. 120° = 60°



b. −135° 45°



Find the measure of the reference angle for each angle.

15. 227°

16. -210°