Today's Plan:

Learning Target (standard): I will describe co-terminal angles and properties of trigonometric angles.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Exercises 2.1 #1-19 odd, 35-41 odd

1) 84.607°

3) 124.880°

5) $23^\circ 8' 24''$

7) $96^\circ 30'$

9) $yes (+)$

11) $no (+)$ vertex is not at the origin

13) $no (-)$ initial side is not on the positive x-axis

15) $yes (+)$

17) $no (+)$ initial side is not on the positive x-axis

19) $yes (+)$

35) yes

37) no

39) yes

41) yes

Convert to decimal degrees.

$9°9'9"$

$9.153°$

$9'\left(\frac{1}{60}\right) = .15°$

$9"\left(\frac{1}{3600}\right) = .0025°$

$+$

Convert to $D^0M'S"$.

$18.255°$

$18°15'18"$

$.255°(60) = 15.3'$

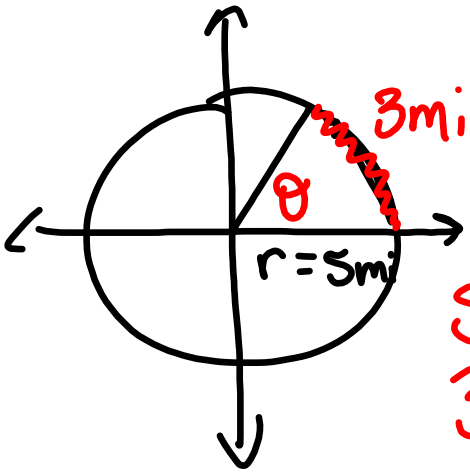
$.3'(60) = 18"$

Find the missing value.

$\theta = ?$

$s = 3miles$

$r = 5miles$

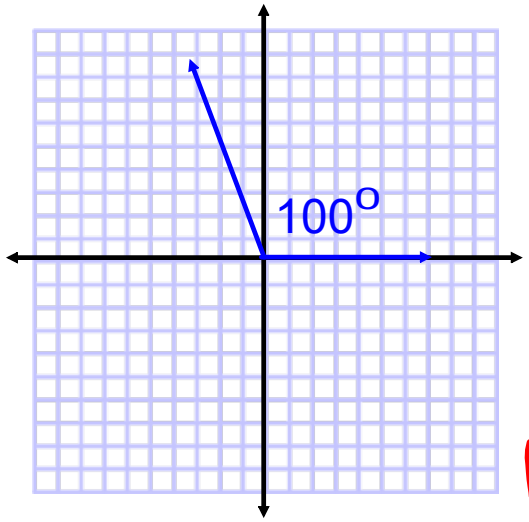


$S = r\theta$

$3 = 5\theta$

$\theta = \frac{3}{5}$

If $\theta = 100^0$, find 3 positive and 3 negative angles that will be coterminal to θ.



$100^\circ + 360^\circ = 460^\circ$

$100^\circ + 2(360^\circ) = 820^\circ$

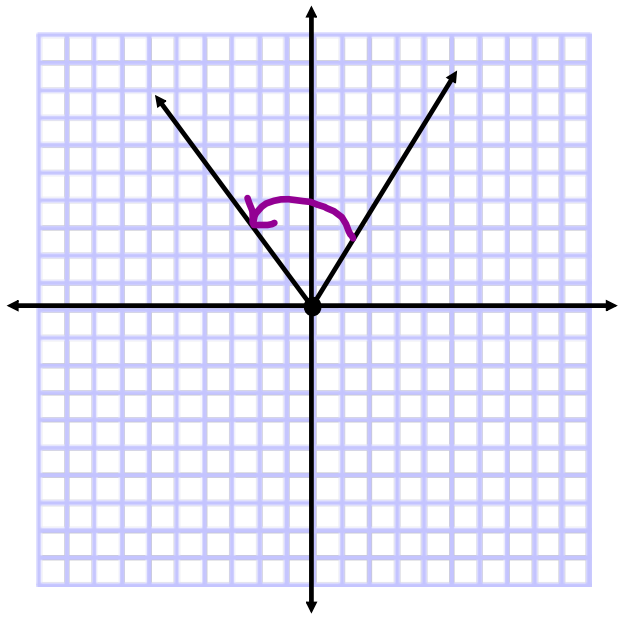
$100^\circ + 3(360^\circ) = 1180^\circ$

$100^\circ - 360^\circ = -260^\circ$

$100^\circ - 2(360^\circ) = -620^\circ$

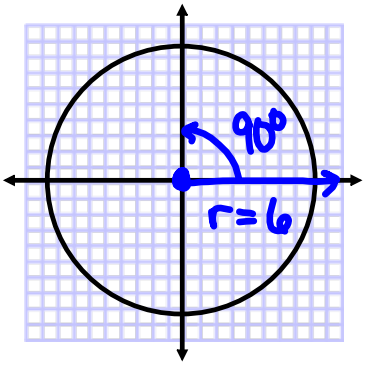
$100^\circ - 3(360^\circ) = -980^\circ$

Standard Position? Why?



No, the initial side is not on the positive x-axis.

The minute hand of a clock is 6 inches long. How far does the tip of the minute hand move in 15 minutes? How far does it move in 25 minutes?



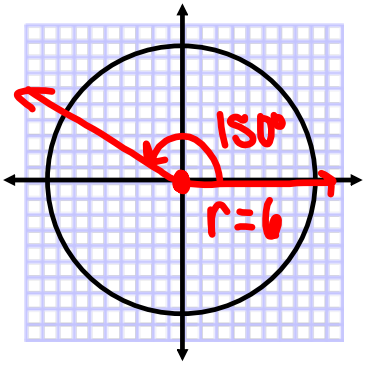
15 minutes = 90°

$90^\circ = \frac{\pi}{2}$

$s = r\theta$

$s = 6\left(\frac{\pi}{2}\right)$

$s = 3\pi$ inches



25 min = 150°

$150^\circ = \frac{5\pi}{6}$

$s = r\theta$

$s = 6\left(\frac{5\pi}{6}\right)$

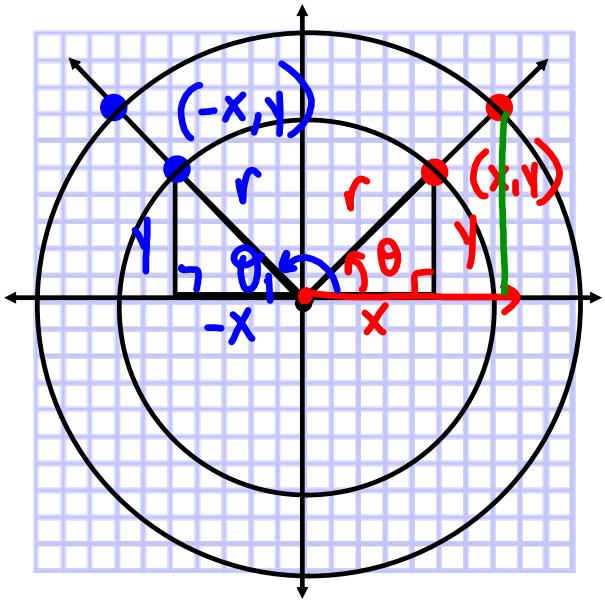
$s = 5\pi$ inches

Properties of Trigonometric Angles:

- a trigonometric angle measures the rotation of one ray (terminal) from the other (initial)
- they can also be used to measure the rotation of a triangle
- a triangle in QI will have comparable trig values to the same triangle in QII, QIII, or QIV
- all trigonometric angles are in standard position

Properties of Trigonometric Angles:

$r = \sqrt{x^2+y^2}$

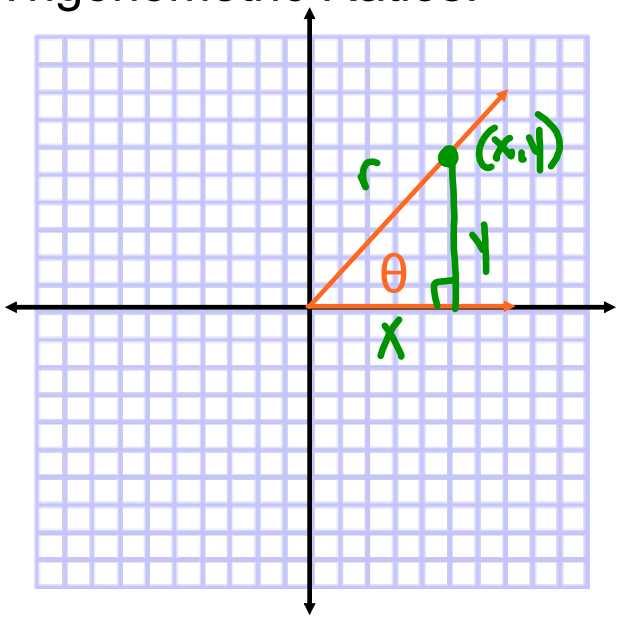


$$\sin\theta = \frac{y}{r} \qquad \sin\theta_1 = \frac{y}{r}$$

$$\cos\theta = \frac{x}{r} \qquad \cos\theta_1 = \frac{-x}{r}$$

$$\tan\theta = \frac{y}{x} \qquad \tan\theta_1 = \frac{-y}{x}$$

Trigonometric Ratios:

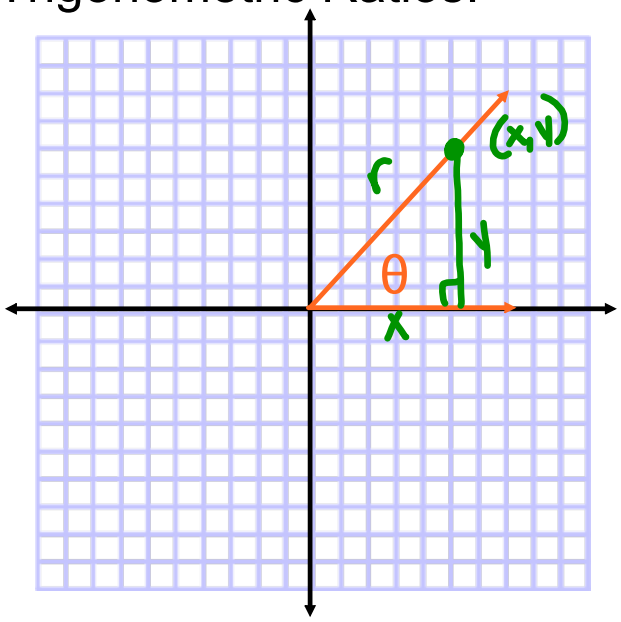


$$\sin\theta = \frac{y}{r}$$

$$\cos\theta = \frac{x}{r}$$

$$\tan\theta = \frac{y}{x}$$

Trigonometric Ratios:

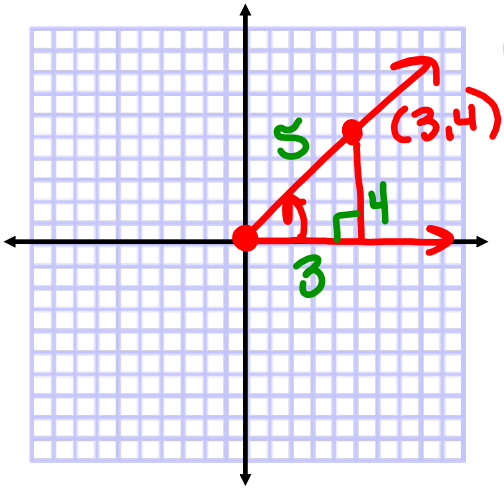


$$\frac{1}{\sin\theta} = \csc\theta = \frac{r}{y}$$

$$\frac{1}{\cos\theta} = \sec\theta = \frac{r}{x}$$

$$\frac{1}{\tan\theta} = \cot\theta = \frac{x}{y}$$

Find the trigonometric values of θ when the terminal side of θ passes through (3,4).



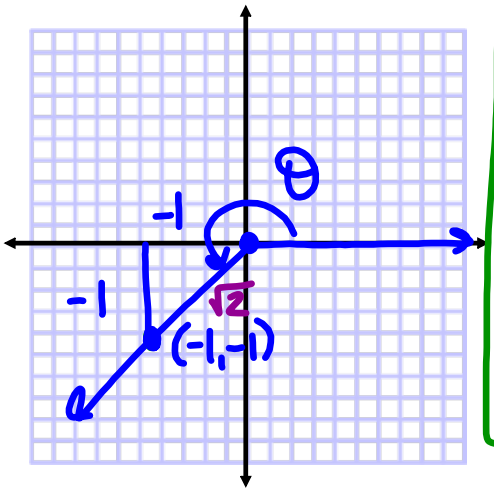
standard position

$$\sin\theta = \frac{4}{5} \qquad \csc\theta = \frac{5}{4}$$

$$\cos\theta = \frac{3}{5} \qquad \sec\theta = \frac{5}{3}$$

$$\tan\theta = \frac{4}{3} \qquad \cot\theta = \frac{3}{4}$$

Find the trigonometric values of θ when the terminal side of θ passes through (-1,-1).



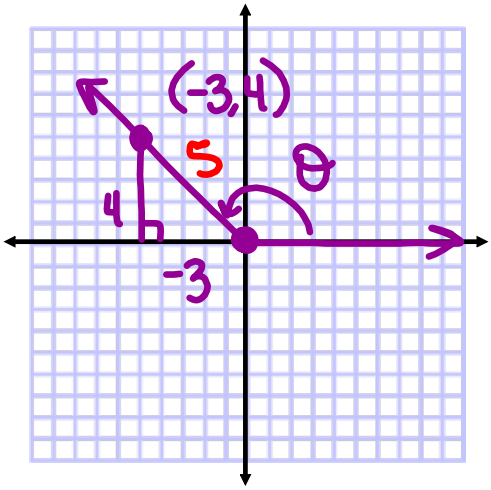
$\sin\theta = -\frac{\sqrt{2}}{2}$ $\quad \csc\theta = -\sqrt{2}$

$\cos\theta = -\frac{\sqrt{2}}{2}$ $\quad \sec\theta = -\sqrt{2}$

$\tan\theta = 1$ $\quad \cot\theta = 1$

always set up this way

Find the trigonometric values of θ when the terminal side of θ passes through (-3,4).

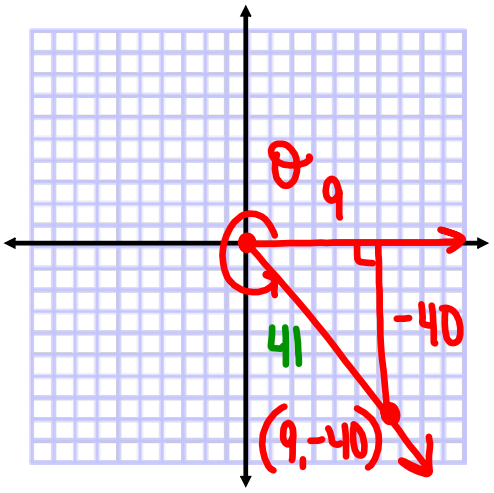


$\sin\theta = \frac{4}{5}$ $\quad \csc\theta = \frac{5}{4}$

$\cos\theta = -\frac{3}{5}$ $\quad \sec\theta = -\frac{5}{3}$

$\tan\theta = -\frac{4}{3}$ $\quad \cot\theta = -\frac{3}{4}$

Find the trigonometric values of θ when the terminal side of θ passes through (9,-40).



$\sin\theta = \frac{-40}{41}$ $\quad \csc\theta = -\frac{41}{40}$

$\cos\theta = \frac{9}{41}$ $\quad \sec\theta = \frac{41}{9}$

$\tan\theta = \frac{-40}{9}$ $\quad \cot\theta = -\frac{9}{40}$

Assignment:

Exercises 2.1 #43-59 odd

* Graph ALL diagrams on graph paper and label the appropriate sides. *