

## WARMUP

Use your chart to calculate the exact values of:

$$A) \sin 870^\circ = \frac{1}{2}$$

$$B) \cos\left(-\frac{7\pi}{6}\right) = -\frac{\sqrt{3}}{2}$$

$$C) \tan 1260^\circ = 0$$

$$D) \csc \frac{25\pi}{3} = \frac{2\sqrt{3}}{3}$$

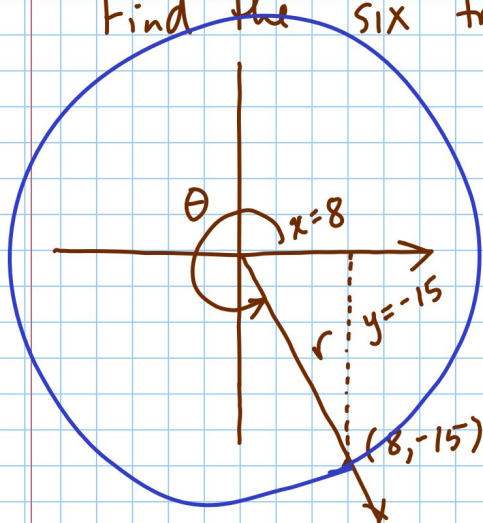
$$E) \sec(-390^\circ) = \frac{2\sqrt{3}}{3}$$

$$F) \cot\left(-\frac{19\pi}{2}\right) = 0$$

## Section 5.2 Continued

The terminal side of  $\theta$  passes through the point  $(8, -15)$ .

Find the six trig function values of  $\theta$ .



$$x^2 + y^2 = r^2$$

$$8^2 + (-15)^2 = r^2$$

$$64 + 225 = r^2$$

$$289 = r^2$$

$$17 = r$$

$$x = 8, y = -15, r = 17$$

$$\sin \theta = \frac{-15}{17} \quad \csc \theta = -\frac{17}{15}$$

$$\cos \theta = \frac{8}{17} \quad \sec \theta = \frac{17}{8}$$

$$\tan \theta = -\frac{15}{8} \quad \cot \theta = -\frac{8}{15}$$

If we're not on the unit circle:

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

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

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

|  |  |
|--|--|
| II                                     | I                                      |
| $x < 0, y > 0$                         | $x > 0, y > 0$                         |
| $\sin \theta > 0$<br>$\csc \theta > 0$ | All +                                  |
| III                                    | IV                                     |
| $x < 0, y < 0$                         | $x > 0, y < 0$                         |
| $\tan \theta > 0$<br>$\cot \theta > 0$ | $\cos \theta > 0$<br>$\sec \theta > 0$ |

$$\sin \theta > 0, \tan \theta < 0$$

Q II

$$\tan \theta > 0, \sec \theta < 0$$

Q III

### Assignment

- 1) If  $(-7, 24)$  lies on the terminal side of  $\theta$ , find the six trig function values of  $\theta$ .
- 2) If  $(-3, -7)$  lies on the terminal side of  $\theta$ , find the six trig function values of  $\theta$ . (Rationalize your denominators)

3) Determine which quadrant  $\theta$

lies in:

- A)  $\sin \theta < 0, \cos \theta > 0$
- B)  $\cos \theta > 0, \tan \theta > 0$
- C)  $\cos \theta < 0, \tan \theta > 0$
- D)  $\csc \theta > 0, \cos \theta < 0$

4) Find exact values using your chart:

A)  $\cos 420^\circ$

B)  $\sin 390^\circ$

C)  $\csc 450^\circ$

D)  $\sec 420^\circ$

E)  $\sin \frac{9\pi}{4}$

F)  $\csc \frac{9\pi}{2}$

G)  $\cot \frac{17\pi}{4}$

H)  $\sec \frac{25\pi}{6}$