

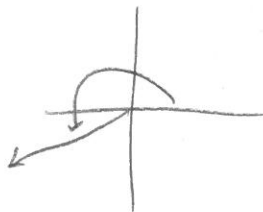
Key  
no work

Unit 3 (3.2)

Reference Angle and Intro to Unit Circle Student Practice

1.  $185^\circ$

a. Draw the angle in standard position



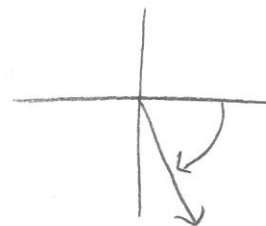
b. Reference angle:  $5^\circ$

c. + coterminal:  $545^\circ$

d. - coterminal:  $-175^\circ$

2.  $-75^\circ$

a. Draw the angle in standard position



b. Reference angle:  $75^\circ$

c. + coterminal:  $285^\circ$

d. - coterminal:  $-435^\circ$

3.  $810^\circ$

a. Draw the angle in standard position



b. Reference angle: None

c. + coterminal:  $90^\circ, 450^\circ, 1170^\circ$

d. - coterminal:  $-270^\circ$

4.  $485^\circ$

a. Draw the angle in standard position



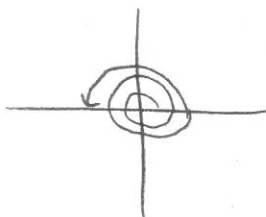
b. Reference angle:  $55^\circ$

c. + coterminal:  $125^\circ, 845^\circ$

d. - coterminal:  $-235^\circ$

5.  $5\pi$

a. Draw the angle in standard position



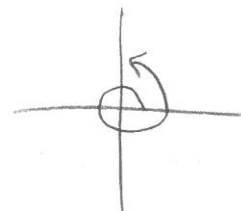
b. Reference angle: None

c. + coterminal:  $\pi, 3\pi, 7\pi$

d. - coterminal:  $-\pi$

6.  $\frac{5\pi}{2}$

a. Draw the angle in standard position



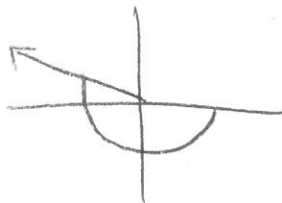
b. Reference angle: None

c. + coterminal:  $\pi/2, 9\pi/2$

d. - coterminal:  $-3\pi/2$

7.  $-\frac{7\pi}{6}$

a. Draw the angle in standard position



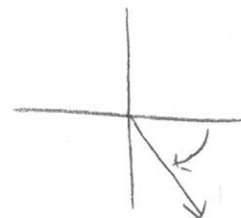
b. Reference angle:  $\frac{\pi}{6}$

c. + coterminal:  $\frac{5\pi}{6}$

d. - coterminal:  $-\frac{19\pi}{6}$

8.  $-\frac{\pi}{3}$

a. Draw the angle in standard position



b. Reference angle:  $\frac{\pi}{3}$

c. + coterminal:  $\frac{5\pi}{3}$

d. - coterminal:  $-\frac{7\pi}{3}$

Find the exact value of each trigonometric function.

9.  $\sin 150^\circ$

$\frac{1}{2}$

10.  $\cos 240^\circ$

$-\frac{1}{2}$

11.  $\cot 135^\circ$

$-1$

12.  $\csc \frac{\pi}{4}$

$\sqrt{2}$

13.  $\sec \frac{5\pi}{4}$

$-\sqrt{2}$

14.  $\tan -\pi$

$0$

15.  $\tan(-30^\circ)$

$-\frac{1}{\sqrt{3}}$

16.  $\sec 780^\circ$

$2$

17.  $\csc 450^\circ$

$1$

18.  $\cos \frac{2\pi}{3}$

$-\frac{1}{2}$

19.  $\sin -\frac{17\pi}{4}$

$-\frac{1}{\sqrt{2}}$

20.  $\cot \frac{11\pi}{6}$

$-\sqrt{3}$

Find the exact values of the remaining five trigonometric functions of  $\theta$ .

21.  $\csc \theta = \sqrt{2}$ , Quadrant II

$\sin \theta = \frac{1}{\sqrt{2}}$

$\csc \theta = \sqrt{2}$

$\cos \theta = -\frac{1}{\sqrt{2}}$

$\sec \theta = -\sqrt{2}$

$\tan \theta = -1$

$\cot \theta = -1$

22.  $\tan \theta = -\frac{12}{5}$ , Quadrant IV

$\sin \theta = -\frac{12}{13}$

$\csc \theta = -\frac{13}{12}$

$\cos \theta = \frac{5}{13}$

$\sec \theta = \frac{13}{5}$

$\tan \theta = -\frac{12}{5}$

$\cot \theta = -\frac{5}{12}$

23.  $\sin \theta = \frac{\sqrt{3}}{2}$ , Quadrant I

$\sin \theta = \frac{\sqrt{3}}{2}$

$\csc \theta = \frac{2}{\sqrt{3}}$

$\cos \theta = \frac{1}{2}$

$\sec \theta = 2$

$\tan \theta = \sqrt{3}$

$\cot \theta = \frac{1}{\sqrt{3}}$

24.  $\sec \theta = -\frac{41}{9}$ , Quadrant III

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

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

$\cos \theta = -\frac{9}{41}$

$\sec \theta = -\frac{41}{9}$

$\tan \theta = \frac{40}{9}$

$\cot \theta = \frac{9}{40}$

Find the exact values of the 6 trig functions.

25. (7, 24)

$$\sin \theta = \frac{24}{25}$$

$$\csc \theta = \frac{25}{24}$$

$$\cos \theta = \frac{7}{25}$$

$$\sec \theta = \frac{25}{7}$$

$$\tan \theta = \frac{24}{7}$$

$$\cot \theta = \frac{7}{24}$$

26. (-16, -63)

$$\sin \theta = -\frac{63}{65}$$

$$\csc \theta = -\frac{65}{63}$$

$$\cos \theta = -\frac{16}{65}$$

$$\sec \theta = -\frac{65}{16}$$

$$\tan \theta = \frac{63}{16}$$

$$\cot \theta = \frac{16}{63}$$

27. (-65, 72)

$$\sin \theta = \frac{72}{97}$$

$$\csc \theta = \frac{97}{72}$$

$$\cos \theta = -\frac{65}{97}$$

$$\sec \theta = -\frac{97}{65}$$

$$\tan \theta = -\frac{72}{65}$$

$$\cot \theta = -\frac{65}{72}$$

28. (33, -56)

$$\sin \theta = -\frac{56}{65}$$

$$\csc \theta = -\frac{65}{56}$$

$$\cos \theta = \frac{33}{65}$$

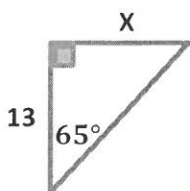
$$\sec \theta = \frac{65}{33}$$

$$\tan \theta = -\frac{56}{33}$$

$$\cot \theta = -\frac{33}{56}$$

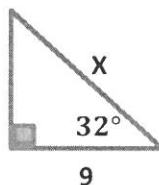
Find the missing side or angle.

29.



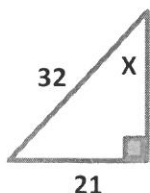
$$X \approx 28.9$$

30.



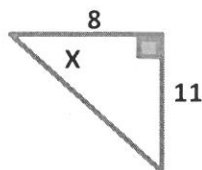
$$X \approx 10.6$$

31.



$$X \approx 41^\circ$$

32.



$$X \approx 54^\circ$$