

4.1 - 4.2 Review

Angles and Their Measure

If each angle has the given measure and is in standard position, determine the quadrant in which its terminal side lies.

1. $\frac{7\pi}{12}$

II

2. $-\frac{2\pi}{3}$

III

5. -156°

III

6. 1000°

IV

Change each degree measure to radian measure in terms of π .

9. 36°

$$\frac{\pi}{5}$$

10. -250°

$$-\frac{25\pi}{18}$$

13. 870°

$$\frac{29\pi}{6}$$

14. 18°

$$\frac{\pi}{10}$$

Change each radian measure to degree measure.

17. -1

$$-1 \cdot \frac{180}{\pi}$$

$$-57.296^\circ$$

18. 4π

$$720^\circ$$

21. $\frac{3\pi}{16}$

$$57.88^\circ$$

22. $-\frac{7\pi}{9}$

$$-\frac{7\pi}{9} \cdot \frac{180}{\pi}$$

$$-140^\circ$$

Find one positive angle and one negative angle that are coterminal with each angle.

25. 70°

$$70^\circ \pm 360^\circ$$

$$430^\circ$$

$$-290^\circ$$

26. $-\frac{2\pi}{5}$

$$-\frac{2\pi}{5} \pm 2\pi$$

$$\frac{8\pi}{5}$$

$$-\frac{12\pi}{5}$$

27. -300°

$$-300^\circ \pm 360^\circ$$

$$60^\circ$$

$$-660^\circ$$

28. $\frac{3\pi}{4}$

$$\frac{3\pi}{4} \pm 2\pi$$

$$\frac{11\pi}{4}$$

$$-\frac{5\pi}{4}$$

Central Angles and Arcs

Given the radian measure of a central angle, find the measure of its intercepted arc in terms of π in a circle of radius 10 cm.



$$\theta = \frac{s}{r}$$

1. $\frac{\pi}{6}$
 $\theta = \frac{\pi}{6}$
 $r = 10$
 $s = ?$
 $\frac{\pi}{6} = \frac{s}{10}$

$$s = 5.23 \text{ cm}$$

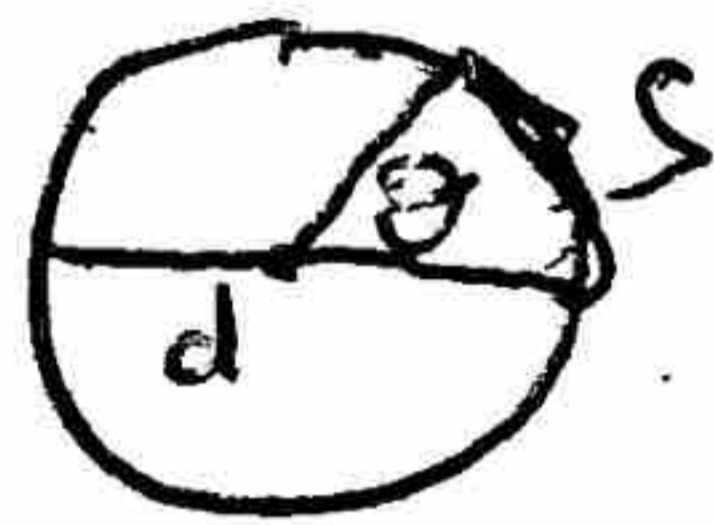
2. $\frac{\pi}{3}$
 $\theta = \frac{\pi}{3}$
 $r = 10$
 $s = ?$
 $\frac{\pi}{3} = \frac{s}{10}$

$$s = 10.47 \text{ cm}$$

3. $\frac{\pi}{2}$
 $\frac{\pi}{2} = \frac{s}{10}$
 15.7 cm

4. $\frac{\pi}{5}$
 $\frac{\pi}{5} = \frac{s}{10}$
 6.28 cm

Given the measurement of a central angle, find the measure of its intercepted arc in terms of π in a circle of diameter 60 in.



Convert to radians first

9. 10°
 $10^\circ \cdot \frac{\pi}{180^\circ}$
 $\theta = \frac{\pi}{18}$
 $r = 30''$
 $\frac{\pi}{18} = \frac{s}{30}$

$$s = 5.23''$$

10. 60°
 $\theta = \frac{\pi}{3}$
 $r = 30''$
 $s = ?$
 $\frac{\pi}{3} = \frac{s}{30}$
 $s = 31.4''$

11. 42°
 $42^\circ \cdot \frac{\pi}{180}$
 $\theta = \frac{7\pi}{30}$
 $\frac{7\pi}{30} = \frac{s}{30}$
 $s = 21.98''$

12. 50°
 $50^\circ \cdot \frac{\pi}{180}$
 $\theta = \frac{5\pi}{18}$
 $\frac{5\pi}{18} = \frac{s}{30}$
 $s = 26.17''$

Given the point P $(\frac{\sqrt{10}}{4}, \frac{\sqrt{6}}{4})$ is on the unit circle, find the exact value of the six main trigonometric functions.

$\sin \theta = x$ $\csc \theta = \frac{1}{x}$
 $\cos \theta = y$ $\sec \theta = \frac{1}{y}$
 $\tan \theta = \frac{y}{x}$ $\cot \theta = \frac{x}{y}$

$$\sin \theta = \frac{\sqrt{6}}{4}$$

$$\cos \theta = \frac{\sqrt{10}}{4}$$

$$\tan \theta = \frac{\sqrt{6}}{4}$$

$$\frac{4}{\sqrt{10}}$$

$$= \frac{\sqrt{6}}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}}$$

$$\tan \theta = \frac{\sqrt{60}}{10}$$

$$\csc \theta = \frac{4}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{4\sqrt{6}}{6} = \frac{2\sqrt{6}}{3}$$

$$\sec \theta = \frac{4}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}} = \frac{4\sqrt{10}}{10} = \frac{2\sqrt{10}}{5}$$

$$\cot \theta = \frac{\sqrt{10}}{4} \cdot \frac{4}{4} = \frac{\sqrt{10}}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{\sqrt{60}}{6}$$