

Section 5.2 Circles and the Sine Ratio

- Find two coterminal angles for each given angle. Draw each set of coterminal angles on the same set of axes in standard position.
a) 75° b) 360° c) -90°
- Which pairs of angles are coterminal? Justify your answer.
a) 90° and 450° b) 45° and 765°
c) 25° and 375° d) -60° and 480°
- An angle is in standard position and has terminal point P. Find the radius of each circle in exact form and the measure of the angle to the nearest tenth of a degree.
a) P(9, 3) b) P(4, -14)
- A point, P(x, y), on the unit circle forms the terminal point of an angle in standard position. Find the coordinates of each point P, to three decimal places.
a) 10° b) 120° c) 210° d) 315°
- Evaluate. Round to three decimal places. Explain why the sign of the result is either positive or negative.
a) $\tan 20^\circ$ b) $\cos 95^\circ$
c) $\sin 200^\circ$ d) $\cos 345^\circ$
- Find the measure of angle θ and a coterminal angle. Then, find one non-coterminal angle, if possible, that gives the same value of $\sin \theta$. Round your answers to the nearest degree.
a) $\sin \theta = 0.1736$ b) $\sin \theta = -0.9659$
c) $\sin \theta = 0.7660$ d) $\sin \theta = 1$
- a) Given $\sin \theta = 0.866$, find the measure of angle θ and a non-coterminal angle that gives the same value of $\sin \theta$. Round your answer to the nearest degree.
b) Given $\cos \theta = 0.866$, find the measure of angle θ and a non-coterminal angle that gives the same value of $\cos \theta$. Round your answer to the nearest degree.
c) With the help of a diagram, explain why there is no angle θ in standard position with terminal arm in the third quadrant such that $\sin \theta = 0.866$ or $\cos \theta = 0.866$.
- The Earth rotates through an angle of 360° each day. Through what angle will the Earth rotate in 4 days and 15 h?
- Determine the measure of angle θ in standard position, correct to one decimal place.
a) $\sin \theta = 0.5$, if θ is in the second quadrant
b) $\tan \theta = 3.6059$, if θ is in the third quadrant
c) $\cos \theta = -0.9026$, if θ is in the third quadrant
d) $\sin \theta = -0.2890$, if θ is in the fourth quadrant
- Given angle θ in standard position with terminal arm in the third quadrant and $\sin \theta = -\frac{16}{20}$, determine the value of $\cos \theta$.
- An amusement park ride consists of a car attached to a rigid arm that rotates in a circle with radius 10 m. The car performs a full revolution every 2.5 s. Round your answers to the nearest tenth of a metre.
a) Find the distance from the car to its starting position after the arm rotates through an angle of 120° .
b) Find the distance from the car to its starting position after it has rotated for 2.0 s.