

Precalculus - Radians and the Unit Circle - Test

Common Core F-TF.A.1, F-TF.A.2, F-TF.A.3, F-TF.A.4 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

This 20-point test covers radian measure, arc length, the unit circle, exact values and a Ferris wheel model (F-TF.A.1 to F-TF.A.4). You have 45 minutes. Show your work.

About this test

- Grade: Precalculus
- Chapter: Radians and the Unit Circle
- Standards: F-TF.A.1, F-TF.A.2, F-TF.A.3, F-TF.A.4
- Time: 45 minutes
- Total: 20 points

Question 1 - Convert angles [2 pts]

Convert 135° to radians and $\frac{7\pi}{6}$ to degrees.

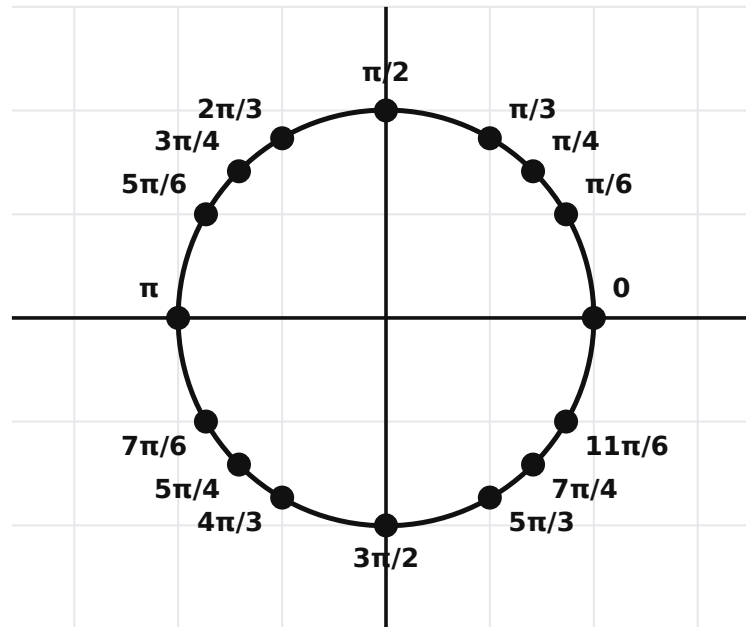
Question 2 - Coterminal angles [2 pts]

Find one positive and one negative angle coterminal with $\frac{5\pi}{6}$.

Question 3 - Arc and sector [2 pts]

A circle has radius 12 ft. For a central angle of $\frac{\pi}{4}$, find the arc length and the sector area, to the nearest hundredth.

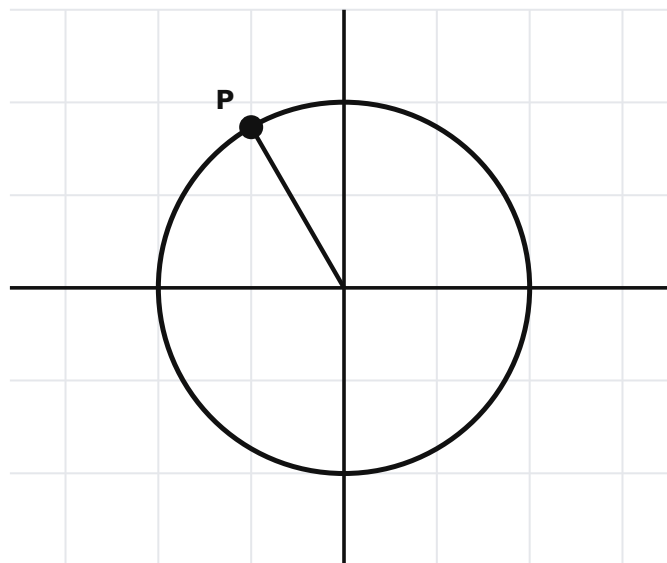
Question 4 - Exact values [2 pts]



The unit circle with special angles.

Use the unit circle. Find the exact value of $\sin \frac{5\pi}{6}$ and $\tan \frac{7\pi}{4}$.

Question 5 - Unit circle point [3 pts]



Point P on the unit circle at $(-1/2, \sqrt{3}/2)$.

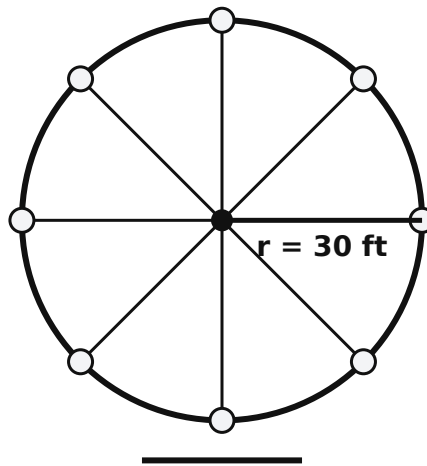
The point $P\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$ lies on the unit circle. (a) Find the angle θ in $[0, 2\pi)$ in radians. (b) Find $\sin \theta$, $\cos \theta$ and $\tan \theta$. (c) Find the reference angle.

Question 6 - Find the other values [2 pts]

If $\sin\theta = -\frac{5}{13}$ and θ is in quadrant IV, find $\cos\theta$ and $\tan\theta$.

Question 7 - Odd and even [2 pts]

Evaluate $\sin\left(-\frac{\pi}{3}\right)$ and $\cos\frac{11\pi}{6}$.

Question 8 - Ferris wheel [3 pts]

Ferris wheel of radius 30 feet.

A Ferris wheel of radius 30 ft makes one full turn every 2 minutes. (a) Find its angular speed in radians per minute. (b) Find the distance a rider travels in 45 seconds, to the nearest hundredth. (c) Through how many degrees does it turn in 45 seconds?

Question 9 - Solve for an angle [2 pts]

Find all θ in $[0, 2\pi)$ with $\cos\theta = -\frac{\sqrt{2}}{2}$.