Circles

CollegeBoard Question Bank

Abstract

This exercise sheet contains

- an **Easy** category with 1 question;
- a **Medium** category with 5 questions;
- a **Hard** category with 11 questions

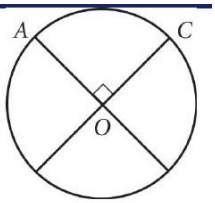
for you to attempt. A digital copy of this sheet is available for you on moodle. Feel free to utilize the **Question Space** on Teams to ask for guidance.

Best,
Omar :)

Circles

Easy

(1) **23c5fcce** MULTIPLE CHOICE One answer only



The circle above with center O has a circumference of 36. What is the length of minor arc AC ?

a. 18
b. 12
c. 36
d. 9

Medium

(1) **8e7689e0** SHORT ANSWER Case-Insensitive

The number of radians in a 720-degree angle can be written as $a\pi$, where a is a constant. What is the value of a ?

(2) **74d8b897** SHORT ANSWER Case-Insensitive

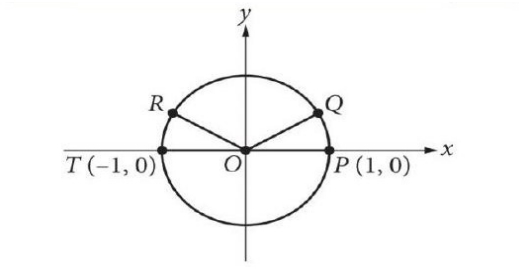
An angle has a measure of $\frac{9\pi}{20}$ radians. What is the measure of the angle in degrees?

(3) **856372ca** MULTIPLE CHOICE One answer only

In the xy-plane, a circle with radius 5 has center $(-8, 6)$. Which of the following is an equation of the circle?

a. $(x-8)^2+(y+6)^2=5$
b. $(x-8)^2+(y+6)^2=25$
c. $(x+8)^2+(y-6)^2=5$
d. $(x+8)^2+(y-6)^2=25$

(4) **95ba2d09** MULTIPLE CHOICE One answer only



In the xy-plane above, points P, Q, R, and T lie on the circle with center O. The degree measures of angles POQ and ROT are each $30°$. What is the radian measure of angle QOR ?

a. $\frac{2}{3}\pi$
b. $\frac{5}{6}\pi$
c. $\frac{3}{4}\pi$
d. $\frac{1}{3}\pi$

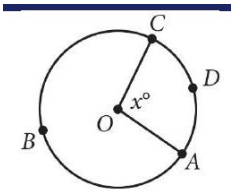
(5) **82c8325f** MULTIPLE CHOICE One answer only

A circle in the xy-plane has its center at $(-4, 5)$ and the point $(-8, 8)$ lies on the circle. Which equation represents this circle?

a. msup $+ (y + 5)^2 = 25$
b. msup $+ (y - 5)^2 = 25$
c. msup $+(y + 5)^2 = 5$
d. msup $+(y - 5)^2 = 5$

Hard

(1) **c8345903** MULTIPLE CHOICE One answer only



The circle above has center O, the length of arc $\overline{ADC}$ is 5π, and $x = 100$. What is the length of arc ABC ?

a. 18π
b. 9π
c. 13π
d. $\frac{13}{2}\pi$

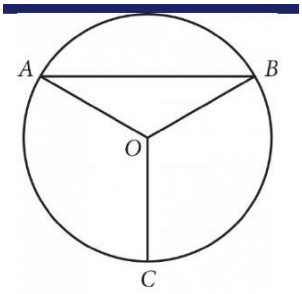
(2) **2266984b** MULTIPLE CHOICE One answer only

$$x^2 + 20x + y^2 + 16y = -20$$

The equation above defines a circle in the xy-plane. What are the coordinates of the center of the circle?

a. $(20, 16)$
b. $(10, 8)$
c. $(-20, -16)$
d. $(-10, -8)$

(3) **69b0d79d** MULTIPLE CHOICE One answer only



Point O is the center of the circle above, and the measure of $\angle OAB$ is $30°$. If the length of $\overline{OC}$ is 18 , what is the length of arc AB ?

a. 18π
b. 15π
c. 12π
d. 9π

(4) **ab176ad6** SHORT ANSWER Case-Insensitive

The equation $(x+6)^2+(y+3)^2=121$ defines a circle in the xy-plane. What is the radius of the circle?

(5) **3e577e4a** MULTIPLE CHOICE One answer only

A circle in the xy-plane has its center at $(-4, -6)$. Line k is tangent to this circle at the point $(-7, -7)$. What is the slope of line k ?

a. $-\frac{1}{3}$
b. $\frac{1}{3}$
c. -3
d. 3

(6) **9e44284b** MULTIPLE CHOICE One answer only

In the xy-plane, the graph of $2x^2 - 6x + 2y^2 + 2y = 45$ is a circle. What is the radius of the circle?

a. $\sqrt{50}$
b. $\sqrt{40}$
c. 5
d. 6.5

(7) **fb58c0db** SHORT ANSWER Case-Insensitive

Points A and B lie on a circle with radius 1 , and arc AB has length $\frac{\pi}{3}$. What fraction of the circumference of the circle is the length of arc AB ?

(8) **89661424** SHORT ANSWER Case-Insensitive

A circle in the xy-plane has its center at $(-5, 2)$ and has a radius of 9 . An equation of this circle is $x^2 + y^2 + ax + by + c = 0$, where a, b, and c are constants. What is the value of c ?

(9) **981275d2** MULTIPLE CHOICE One answer only

$$(x-6)^2+(y+5)^2=16$$

In the xy-plane, the graph of the equation above is a circle. Point P is on the circle and has coordinates $(10,-5)$. If $\overline{PQ}$ is a diameter of the circle, what are the coordinates of point Q ?

a. $(2,-5)$
b. $(6,-9)$
c. $(6,-5)$
d. $(6,-1)$

(10) **ca2235f6** MULTIPLE CHOICE One answer only

A circle has center O, and points A and B lie on the circle. The measure of arc AB is $45°$ and the length of arc AB is 3 inches. What is the circumference, in inches, of the circle?

a. 3
b. 9
c. 6
d. 24

(11) **acd30391** MULTIPLE CHOICE One answer only

A circle in the xy-plane has equation $(x+3)^2+(y-1)^2=25$. Which of the following points does NOT lie in the interior of the circle?

a. $(-3,1)$
b. $(-7,3)$
c. $(0,0)$
d. $(3,2)$

Total of marks: 17