

#1

ID: 858fd1cf

A circle in the xy -plane has its center at $(-1, 1)$. Line t is tangent to this circle at the point $(5, -4)$. Which of the following points also lies on line t ?

- A) $(0, \frac{6}{5})$
- B) $(4, 7)$
- C) $(10, 2)$
- D) $(11, 1)$

#2

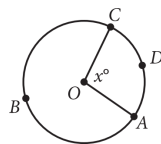
ID: 9adb86ed

Points Q and R lie on a circle with center P . The radius of this circle is 9 inches. Triangle PQR has a perimeter of 31 inches. What is the length, in inches, of $\tilde{QR}$?

- A) $13\sqrt{2}$
- B) 13
- C) $9\sqrt{2}$
- D) 9

#3

ID: c8345903



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

- A) 9π
- B) 13π
- C) 18π
- D) $\frac{13}{2}\pi$

#4

ID: 76c73dbf

The graph of $x^2 + x + y^2 + y = \frac{199}{2}$ in the xy -plane is a circle. What is the length of the circle's radius?

#5

ID: e50afdd3

$$(x + 4)^2 + (y - 19)^2 = 121$$

The graph of the given equation is a circle in the xy -plane. The point (a, b) lies on the circle. Which of the following is a possible value for a ?

- A) -16
- B) -14
- C) 11
- D) 19

#6

ID: 2266984b

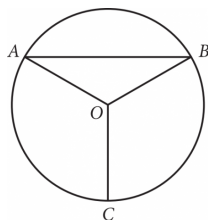
$$x^2 + 20x + y^2 + 16y = -20$$

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) $(10, 8)$
- D) $(20, 16)$

#7

ID: 69b0d79d



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 $\widehat{AB}$?

- A) 9π
- B) 12π
- C) 15π
- D) 18π

#8

ID: ebbf23ae

A circle in the xy -plane has a diameter with endpoints $(2, 4)$ and $(2, 14)$. An equation of this circle is $(x - 2)^2 + (y - 9)^2 = r^2$, where r is a positive constant. What is the value of r ?

#9

ID: b8a225ff

Circle A in the xy -plane has the equation $(x + 5)^2 + (y - 5)^2 = 4$. Circle B has the same center as circle A. The radius of circle B is two times the radius of circle A. The equation defining circle B in the xy -plane is $(x + 5)^2 + (y - 5)^2 = k$, where k is a constant. What is the value of k ?

#10

ID: b0a72bdc

What is the diameter of the circle in the xy -plane with equation $(x - 5)^2 + (y - 3)^2 = 16$?

- A) 4
- B) 8
- C) 16
- D) 32

#11

ID: 249d3f80

Point O is the center of a circle. The measure of arc RS on this circle is 100° . What is the measure, in degrees, of its associated angle ROS ?

#12

ID: ab176ad6

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

#13

ID: 3e577e4a

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) -3
- B) $-\frac{1}{3}$
- C) $\frac{1}{3}$
- D) 3

#14

ID: 24cec8d1

A circle has center O , and points R and S lie on the circle. In triangle ORS , the measure of $\angle ROS$ is 88° . What is the measure of $\angle RSO$, in degrees? (Disregard the degree symbol when entering your answer.)

#15

ID: 9e44284b

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) 5
- B) 6.5
- C) $\sqrt{40}$
- D) $\sqrt{50}$

#16

ID: 9acd101f

The equation $x^2 + (y - 1)^2 = 49$ represents circle A. Circle B is obtained by shifting circle A down 2 units in the xy -plane. Which of the following equations represents circle B?

- A) $(x - 2)^2 + (y - 1)^2 = 49$
- B) $x^2 + (y - 3)^2 = 49$
- C) $(x + 2)^2 + (y - 1)^2 = 49$
- D) $x^2 + (y + 1)^2 = 49$

#17

ID: 244ff6c4

What is the value of $\tan \frac{92\pi}{3}$?

- A) $-\sqrt{3}$
- B) $-\frac{\sqrt{3}}{3}$
- C) $\frac{\sqrt{3}}{3}$
- D) $\sqrt{3}$

#18

ID: 0acfddb5

A circle has center G , and points M and N lie on the circle. Line segments MH and NH are tangent to the circle at points M and N , respectively. If the radius of the circle is 168 millimeters and the perimeter of quadrilateral $GMHN$ is 3,856 millimeters, what is the distance, in millimeters, between points G and H ?

- A) 168
- B) 1,752
- C) 1,760
- D) 1,768

#19

ID: ca2235f6

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) 6
- C) 9
- D) 24

#20

ID: 9d159400

Which of the following equations represents a circle in the xy -plane that intersects the y -axis at exactly one point?

- A) $(x - 8)^2 + (y - 8)^2 = 16$
- B) $(x - 8)^2 + (y - 4)^2 = 16$
- C) $(x - 4)^2 + (y - 9)^2 = 16$
- D) $x^2 + (y - 9)^2 = 16$

#21

ID: 981275d2

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

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) $(6, -1)$
- C) $(6, -5)$
- D) $(6, -9)$

#22

ID: 89661424

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 ?

#23

ID: 196e8e6e

In the xy -plane, a circle has center C with coordinates (h, k) . Points A and B lie on the circle. Point A has coordinates $(h + 1, k + \sqrt{102})$, and $\angle ACB$ is a right angle. What is the length of $\overline{AB}$?

- A) $\sqrt{206}$
- B) $2\sqrt{102}$
- C) $103\sqrt{2}$
- D) $103\sqrt{3}$

#24

ID: e80d62c6

The equation $x^2 + (y - 2)^2 = 36$ represents circle A . Circle B is obtained by shifting circle A down 4 units in the xy -plane. Which of the following equations represents circle B ?

- A) $x^2 + (y + 2)^2 = 36$
- B) $x^2 + (y - 6)^2 = 36$
- C) $(x - 4)^2 + (y - 2)^2 = 36$
- D) $(x + 4)^2 + (y - 2)^2 = 36$

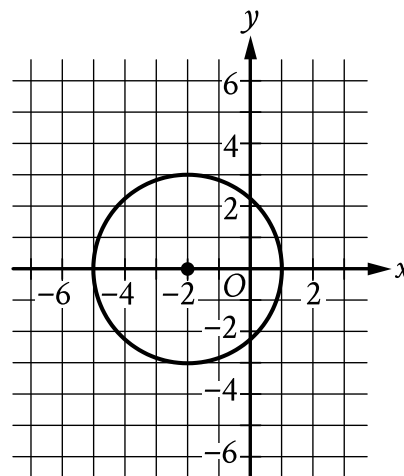
#25

ID: fb58c0db

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

#26

ID: a38c0183



Circle A (shown) is defined by the equation $(x + 2)^2 + y^2 = 9$. Circle B (not shown) is the result of shifting circle A down 6 units and increasing the radius so that the radius of circle B is 2 times the radius of circle A . Which equation defines circle B ?

- A) $(x + 2)^2 + (y + 6)^2 = (4)(9)$
- B) $2(x + 2)^2 + 2(y + 6)^2 = 9$
- C) $(x + 2)^2 + (y - 6)^2 = (4)(9)$
- D) $2(x + 2)^2 + 2(y - 6)^2 = 9$

#27

ID: acd30391

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) $(-7, 3)$
- B) $(-3, 1)$
- C) $(0, 0)$
- D) $(3, 2)$

#28

ID: 6585d841

$$x^2 + 14x + y^2 = 6y + 109$$

In the xy -plane, the graph of the given equation is a circle.

What is the length of the circle's radius?

A) $\sqrt{109}$

B) $\sqrt{149}$

C) $\sqrt{167}$

D) $\sqrt{341}$

#29

ID: 1efd7ef3

What is the value of $\sin 42\pi$?

A) 0

B) $\frac{1}{2}$

C) $\frac{\sqrt{2}}{2}$

D) 1