

Geometry - Equations of Circles and Parabolas - Worksheet

Common Core G-GPE.A.1, G-GPE.A.2 · maths-pdf.fr/en/

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

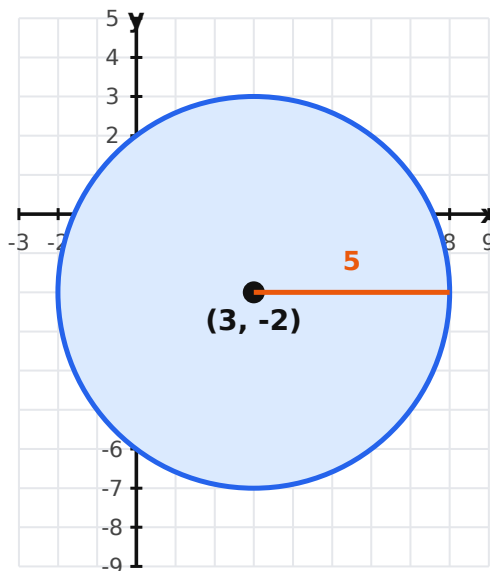
These 20 problems practice equations of circles, completing the square and parabolas (Common Core G-GPE.A.1, G-GPE.A.2). The first problems are quick one-step checks of the definitions and formulas from the lesson. The middle problems ask for diagrams, equations and careful reasoning in the style of a high school Geometry class. The last six problems are applications with radio towers, fire towers and satellite dishes.

Geometry · Common Core State Standards: **G-GPE.A.1, G-GPE.A.2**

Exercise 1 - Circle at the origin

Write the equation of the circle with center at the origin and radius 7.

Exercise 2 - Center and radius given



Circle drawn around (3, -2) with radius 5.

Write an equation of the circle with center (3, -2) and radius 5.

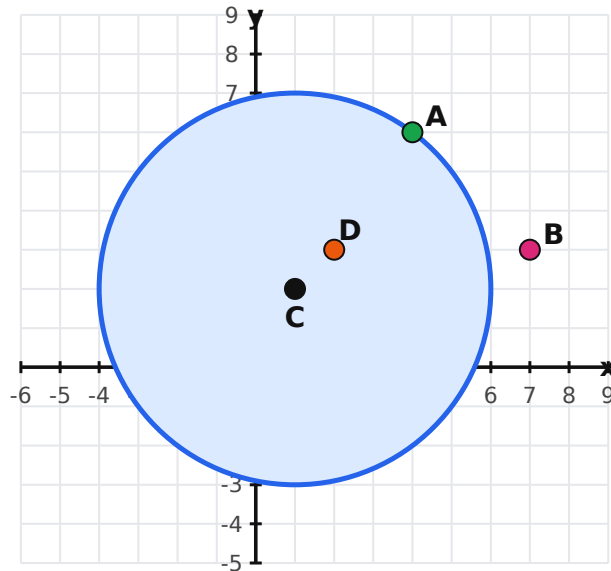
Exercise 3 - Read the equation

Find the center and radius of $(x+4)^2+(y-1)^2=36$.

Exercise 4 - Radius from r squared

A circle has equation $(x-2)^2+(y+3)^2=20$. Find the radius in simplest radical form.

Exercise 5 - Point on the circle?



Point A lies on the circle, B lies outside and D lies inside.

Is the point $A(4,6)$ on the circle $(x-1)^2+(y-2)^2=25$?

Exercise 6 - Outside or inside?

Decide whether $B(7,3)$ and $D(2,3)$ are inside, on, or outside the circle $(x-1)^2+(y-2)^2=25$.

Exercise 7 - Circle through a point

A circle has center $(-1,2)$ and passes through $(3,5)$. Write its equation.

Exercise 8 - Circle from a diameter

The endpoints of a diameter are $(-2,3)$ and $(6,7)$. Write the equation of the circle.

Exercise 9 - Complete the square (1)

Rewrite $x^2+y^2-6x+4y-12=0$ in center-radius form. Find the center and radius.

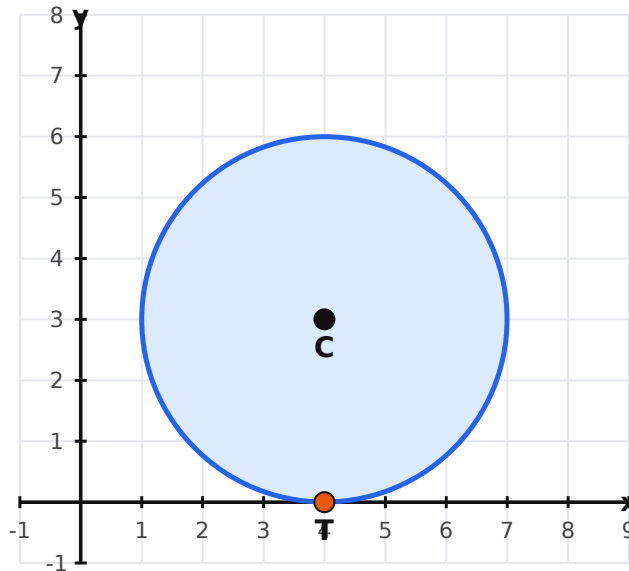
Exercise 10 - Complete the square (2)

Rewrite $x^2+y^2-12x+6y+20=0$ in center-radius form. Find the center and radius.

Exercise 11 - Complete the square (3)

Rewrite $x^2+y^2-10x=0$ in center-radius form.

Exercise 12 - Tangent to the x-axis



Circle tangent to the x-axis.

A circle with center $(4,3)$ is tangent to the x-axis. Write its equation and the point of tangency.

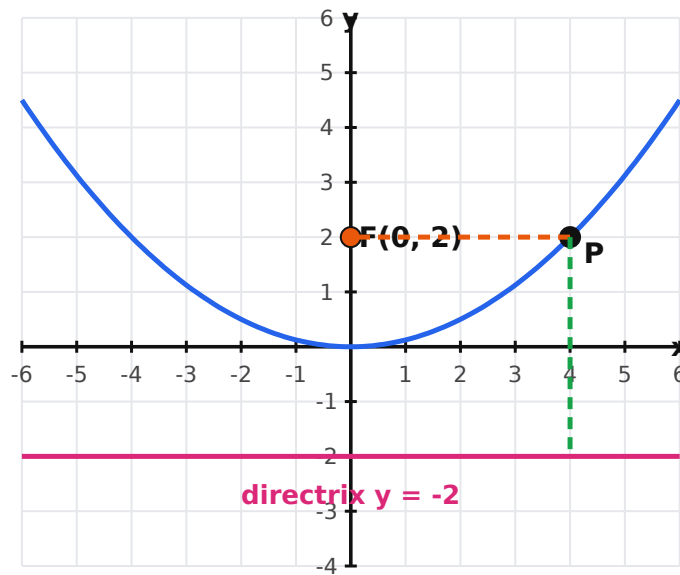
Exercise 13 - Line and circle

Find the points where the line $y = x+1$ meets the circle $x^2+y^2=25$.

Exercise 14 - Area and circumference

A circle has equation $x^2+y^2=81$. Find its circumference and area.

Exercise 15 - Parabola equation



Each point of the curve is the same distance from F and from the line $y = -2$.

A parabola has focus $(0,2)$ and directrix $y = -2$. Show that its equation is $x^2 = 8y$.

Exercise 16 - Parabola with focus $(0, 3)$

Write the equation of the parabola with focus $(0,3)$ and directrix $y = -3$.

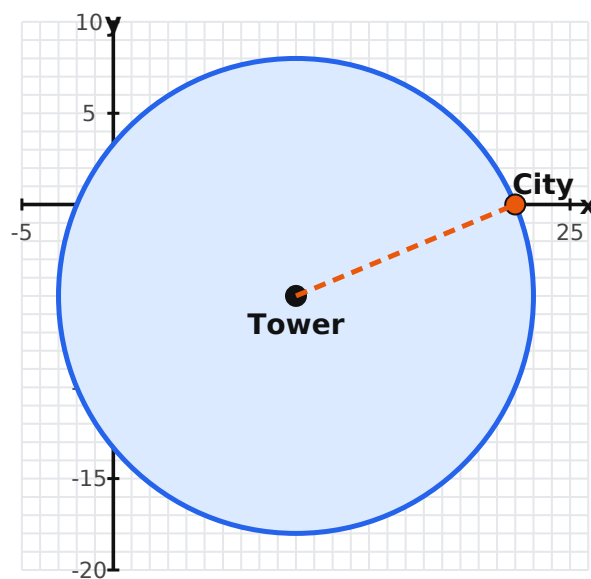
Exercise 17 - Check a point on a parabola

Show that $P(4,2)$ is on the parabola $x^2 = 8y$ by comparing its distances to the focus $(0,2)$ and to the directrix $y = -2$.

Exercise 18 - Find the focus

A parabola has equation $y = \frac{x^2}{16}$. Find its focus and directrix.

Exercise 19 - Radio coverage



Radio tower range.

A radio tower at $(10, -5)$ (miles from a map origin) broadcasts 13 miles. Write the equation of its coverage boundary and decide whether a city at $(22, 0)$ is inside, on, or outside it.

Exercise 20 - Satellite dish

A satellite dish has a cross-section $y = \frac{x^2}{24}$ (units in feet). Find the position of the receiver, which sits at the focus, and the depth of the dish where its width is 24 feet.