

Precalculus · Conic Sections: Parabolas, Ellipses and Hyperbolas · Test

Common Core G-GPE.A.1, G-GPE.A.2, G-GPE.A.3 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This precalculus conic sections test checks conic sections: parabolas, ellipses and hyperbolas in 45 minutes, with 8 questions for a total of 20 points.

This test has 8 questions worth 20 points in total and should take about 45 minutes. It covers circles, parabolas, ellipses, hyperbolas and completing the square. Show all work. A calculator is allowed.

Test information

- **Grade:** Precalculus
- **Chapter:** Conic Sections: Parabolas, Ellipses and Hyperbolas
- **Common Core:** G-GPE.A.1, G-GPE.A.2, G-GPE.A.3
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 3 pts; Question 3: 3 pts; Question 4: 2 pts; Question 5: 3 pts; Question 6: 2 pts; Question 7: 3 pts; Question 8: 2 pts)

Precalculus Conic Sections Test: questions 1-5

Question 1: Equations of circles (2 points)

- Write the equation of the circle with center $(-3, 4)$ and radius 6. (1 point)
- State the center and radius of $(x-1)^2+(y+5)^2=18$. (1 point)

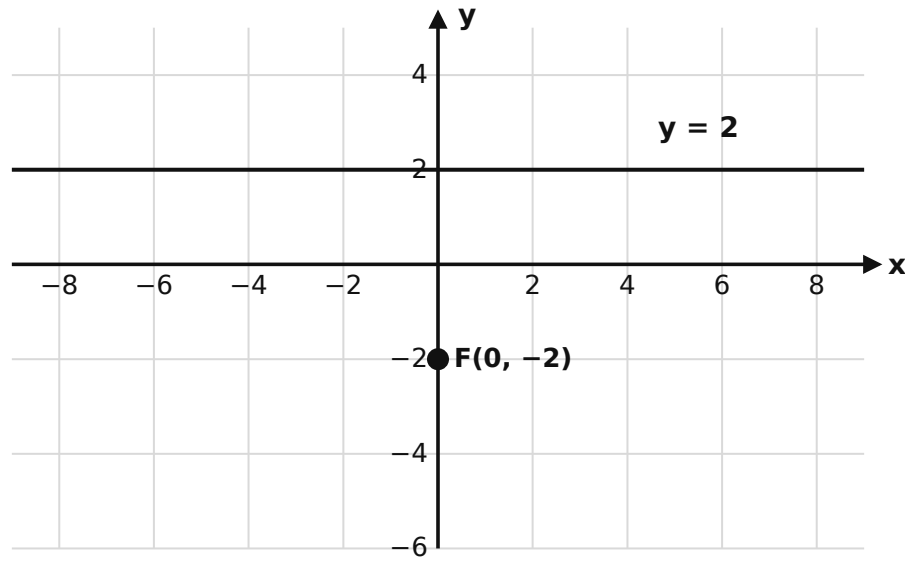
Question 2: Completing the square for a circle (3 points)

A circle has equation $x^2+y^2+6x-8y-11=0$.

- Write the equation in standard form. (1 point)
- Find the center and radius. (1 point)
- Determine whether the point $(3, 4)$ lies on the circle. (1 point)

Question 3: Parabola from focus and directrix (3 points)

A parabola has focus $(0, -2)$ and directrix $y = 2$, as shown.



Focus and directrix.

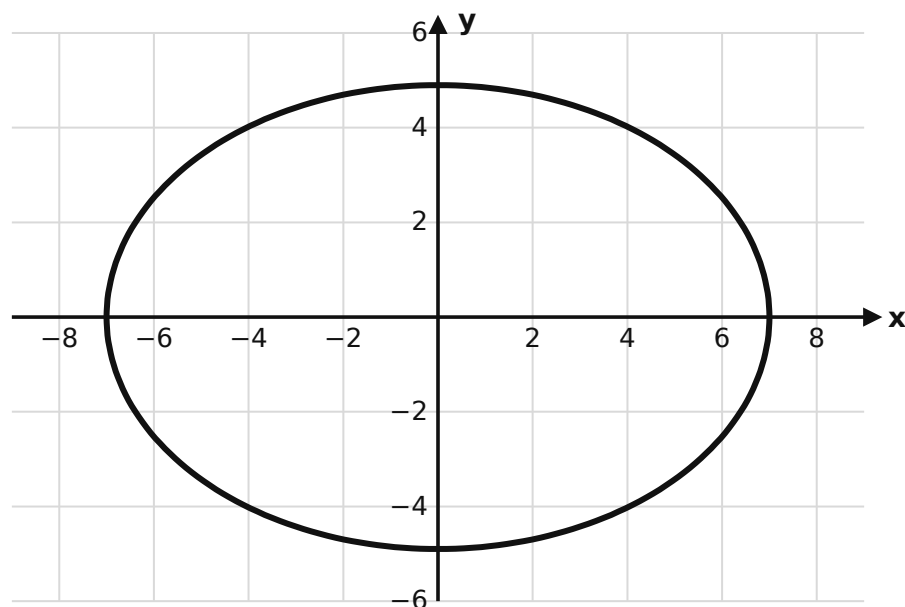
- Write its equation. (2 points)
- Find the y -coordinate of the point on the parabola with $x = 4$. (1 point)

Question 4: Parabola features (2 points)

For the parabola $y^2 = 12x$, find the focus and the directrix. (1 point each)

Question 5: Ellipse features (3 points)

The graph of $\frac{x^2}{49} + \frac{y^2}{24} = 1$ is shown.



An ellipse.

- Find the vertices on the major axis. (1 point)
- Find the foci. (1 point)
- For any point on the ellipse, what is the sum of the distances to the foci? (1 point)

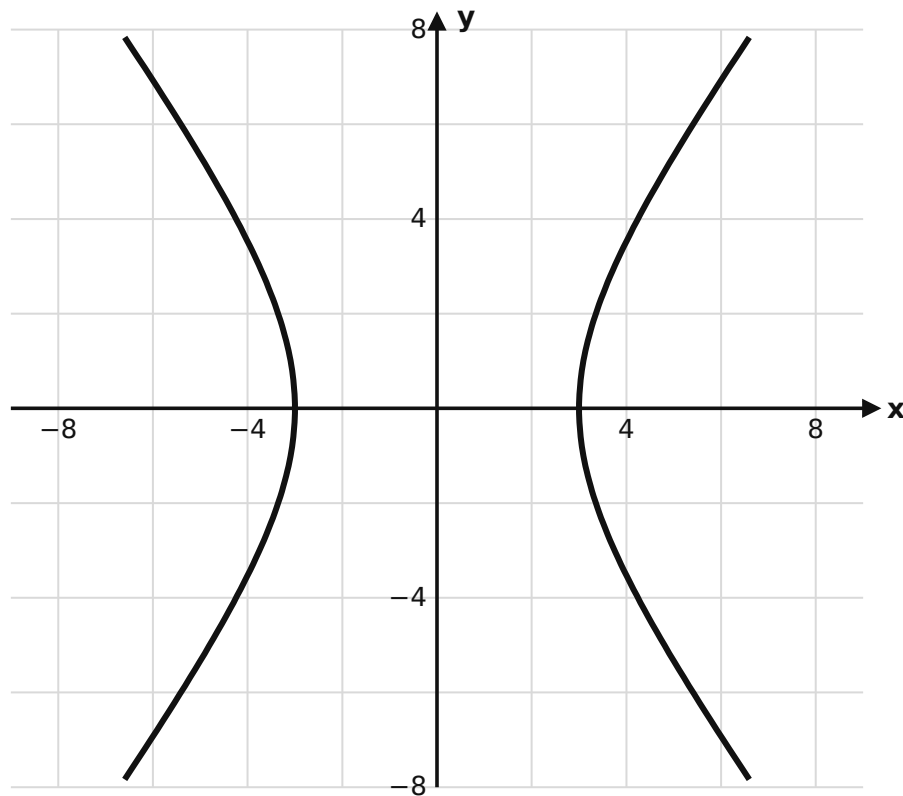
Precalculus Conic Sections Test: questions 6-8

Question 6: Ellipse from its foci (2 points)

An ellipse has foci $(0, \pm 4)$. The sum of the distances from any point on it to the two foci is 10. Write its equation.

Question 7: Hyperbola features (3 points)

The graph of $\frac{x^2}{9} - \frac{y^2}{16} = 1$ is shown.



A hyperbola.

- Find the vertices. (1 point)
- Find the foci. (1 point)
- Write the equations of the asymptotes. (1 point)

Question 8: Identify a conic (2 points)

Consider $9x^2 - 16y^2 - 36x - 32y - 124 = 0$.

- Write the equation in standard form. (1 point)
- Name the conic and state its center. (1 point)

How to use this precalculus conic sections test

Take this precalculus conic sections test without notes, then grade it with the test answer key out of 20 points.

