

Geometry - Equations of Circles and Parabolas - Test Answer Key

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

Use this answer key and scoring guide for the equations of circles test. Each solution shows the full work, and the scoring note tells how the points are split between method and final answer. Partial credit is listed so that grading stays consistent from one paper to the next.

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

Question 1 - Write an equation [2 pts]

$$(x+3)^2+(y-4)^2=36$$

$$(x + 3)^2 + (y - 4)^2 = 36$$

Scoring: 1 point for the form, 1 point for correct signs and r^2 .

Question 2 - Center and radius [2 pts]

Center $(-7,4)$, radius $\sqrt{64}=8$.

Scoring: 1 point each.

Question 3 - Complete the square [3 pts]

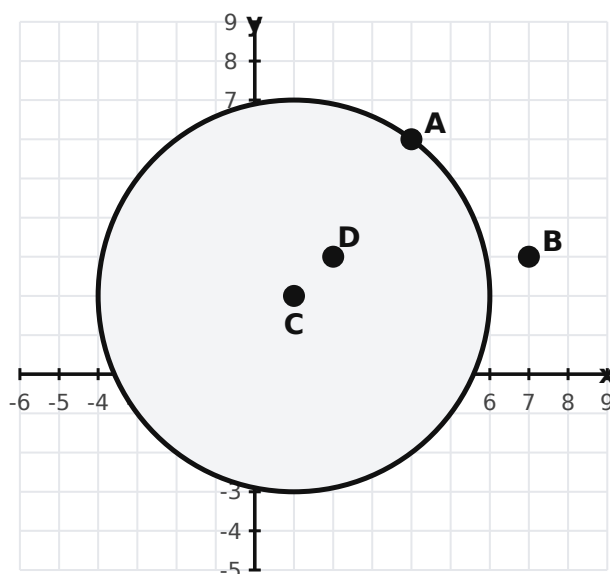
a. $(x^2+6x+9)+(y^2-10y+25)=-18+9+25$, so $(x+3)^2+(y-5)^2=16$

b. $(-3,5)$

c. 4

Scoring: 1 point per part.

Question 4 - Point and circle [2 pts]



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

(2, 3): $1+1=2 < 25$, inside.

(4, 6): $9+16=25$, on the circle.

(7, 3): $36+1=37 > 25$, outside.

Scoring: 1 point for two correct, 2 for all three.

Question 5 - Circle from a diameter [2 pts]

Center: (3,5). $d^2 = 8^2 + 6^2 = 100$, so $r = 5$.

$$(x-3)^2 + (y-5)^2 = 25$$

$$(x - 3)^2 + (y - 5)^2 = 25$$

Scoring: 1 point for the center, 1 point for the equation.

Question 6 - Line meets circle [2 pts]

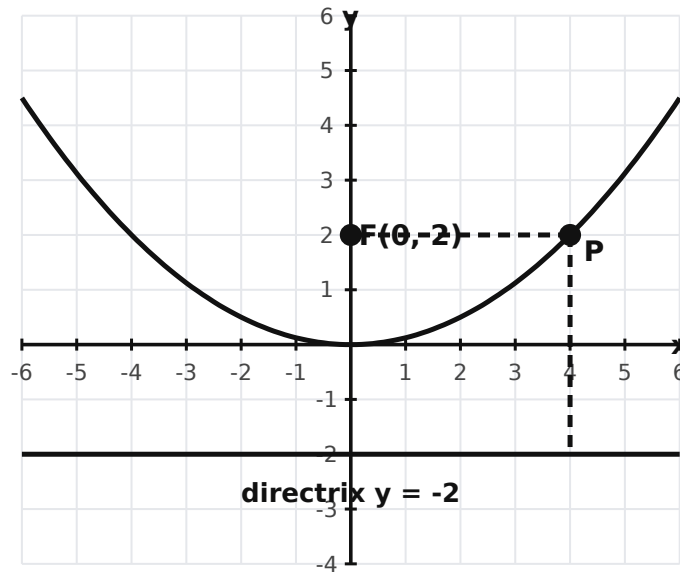
$x^2 + (2x)^2 = 20$, so $5x^2 = 20$ and $x = 2$ or $x = -2$.

The points are (2,4) and (-2,-4).

(2, 4) and (-2, -4)

Scoring: 1 point for the equation, 1 point for both points.

Question 7 - Parabola [3 pts]



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

- (a) $x^2 = 8y$.
- (b) $16 = 8 \cdot 2$.
- (c) $2 - (-2) = 4$.

Scoring: 1 point per part.

Question 8 - Tangent circle [2 pts]

The distance from the center to the y-axis is 5, so the radius is 5.

$$(x-5)^2 + (y+4)^2 = 25$$

$$(x - 5)^2 + (y + 4)^2 = 25$$

Scoring: 1 point for the radius, 1 point for the equation.

Question 9 - Fire tower [2 pts]

(9, 12): $81+144=225=15^2$, on the boundary, visible.

(12, 10): $144+100=244>225$, outside, not visible.

Scoring: 1 point each.

Total
20 points