NudgeLearn

Algebra 2 · Math

Conic Sections

HSG.GPE.A.1 HSG.GPE.A.2

Name _____ Date _____

Show your work in the space provided. Write circle equations in the form $(x-h)^2+(y-k)^2=r^2$ and give exact values for every center, radius, focus, and directrix.

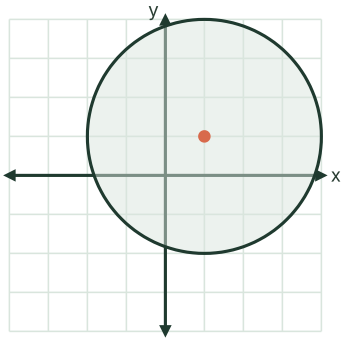
1. Identify the center and radius of the circle $(x-3)^2+(y+2)^2=25$.

2. Identify the center and radius of the circle $(x+4)^2+y^2=49$.

3. Write the equation of the circle with center $(-1,5)$ and radius 3.

4. Write the equation of the circle whose center is the origin and which passes through the point $(6,8)$.

5. Name the center and radius of the circle graphed below.



6. Convert $x^2+y^2-6x+8y+9=0$ to standard form by completing the square, then state the center and radius.

7. Convert $x^2+y^2+10x-4y+13=0$ to standard form, then state the center and radius.

8. Which equation represents a circle with center $(2,-3)$ and radius 6?

   A) $(x-2)^2+(y+3)^2=6$

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

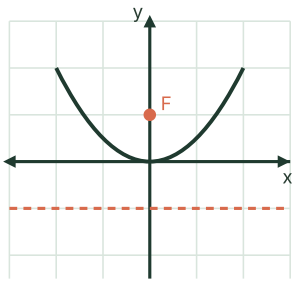
   C) $(x-2)^2+(y+3)^2=36$

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

9. For the parabola $y=\frac{1}{8}x^2$, state the vertex, the focus, and the directrix.

10. For the parabola $(x-2)^2 = 12(y-1)$, state the vertex, the focus, and the directrix.

11. Sketch shown below is the parabola $x^2 = 4y$. State its focus and directrix.



12. Rewrite $y = \frac{1}{4}(x-1)^2 - 3$ in the form $(x-h)^2 = 4p(y-k)$, then give the vertex and the value of p.

13. Write the equation of the parabola with vertex $(0, 0)$ and focus $(0, 5)$.

14. A satellite dish has a cross-section shaped like the parabola $x^2 = 16y$ (units in feet), with the receiver placed at the focus. How far above the vertex of the dish should the receiver be mounted?

15. A circular garden is laid out on a coordinate grid (units in meters). A path runs along the diameter from $(2, 3)$ to $(10, 9)$. Find the center of the garden and its radius.