

CIRCLES

Match each equation to its graph.

E 1. $(x + 1)^2 + (y - 2)^2 = 9$

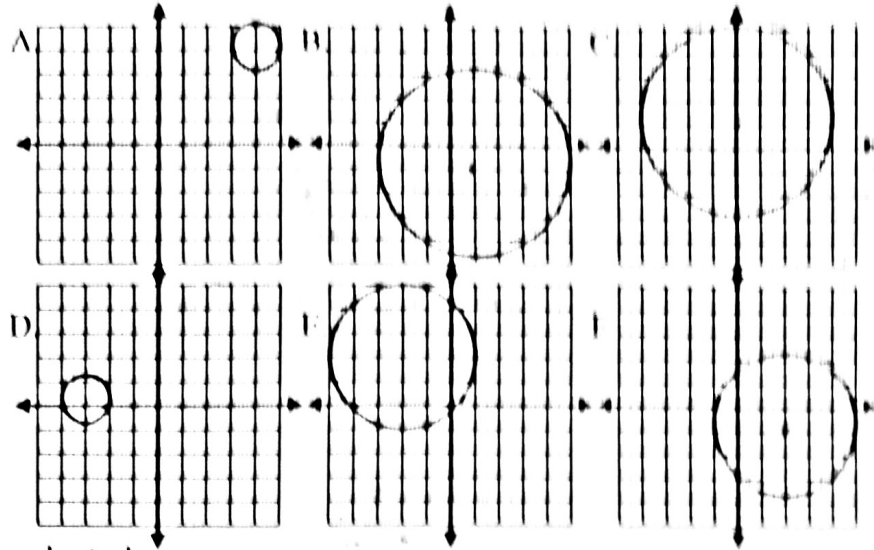
F 2. $(x - 2)^2 + (y + 1)^2 = 9$

C 3. $x^2 + (y - 1)^2 = 16$

A 4. $x^2 - 8x + y^2 - 8y + 31 = 0$

B 5. $(x - 1)^2 + (y + 1)^2 = 16$

D 6. $(x + 3)^2 + y^2 = 1$



Find the center and the radius of each circle.

7. $(x + 1)^2 + (y - 12)^2 = 36$

C: (-1, 12) R: 6

8. $x^2 + (y + 3)^2 = 144$

C: (0, -3) R: 12

Write the equation in standard form of the circle given the following information.

9. Center: (2, -1)

Point: (2, 2)

$(x - 2)^2 + (y + 1)^2 = 9$

10. Point: (1, 2), (2, 3), (3, 1)

$x^2 + y^2 - \frac{13}{3}x - \frac{11}{3}y + \frac{20}{3} = 0$

Write the equation in standard form by completing the square.

11. $x^2 + 2x + y^2 + 6y + 6 = 0$

$(x + 1)^2 + (y + 3)^2 = 4$

12. $x^2 + 8x + y^2 - 4y + 11 = 0$

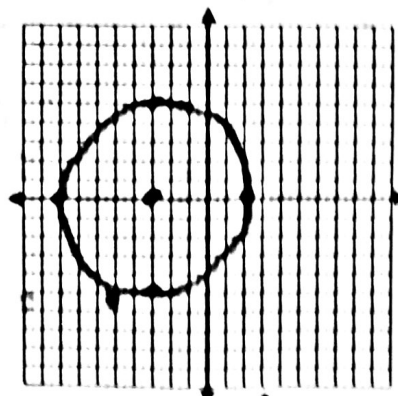
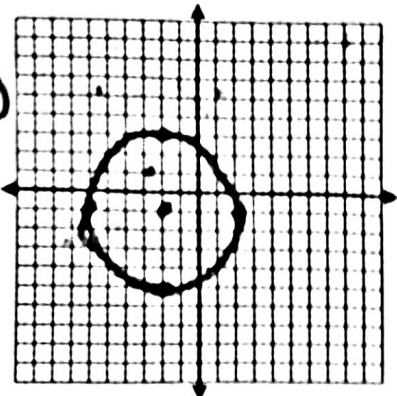
$(x + 4)^2 + (y - 2)^2 = 9$

Sketch the graph of the equation.

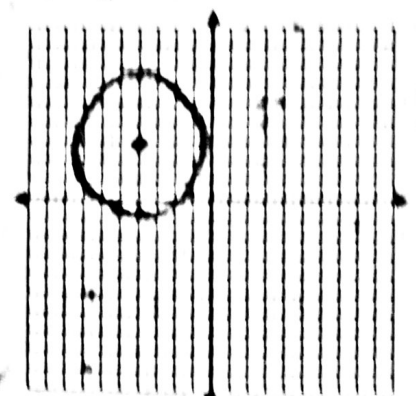
13. $(x - 2)^2 + (y + 1)^2 = 16$

14. $(x + 3)^2 + y^2 = 25$ 15. $(x + 4)^2 + (y - 3)^2 = 12$

**C: (2, -1)
R: 4**



**C: (-3, 0)
R: 5**

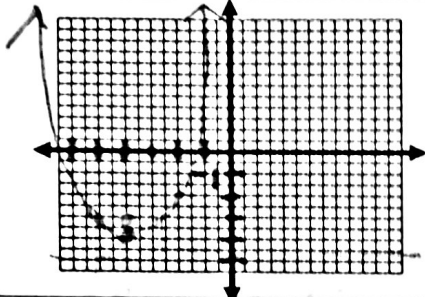
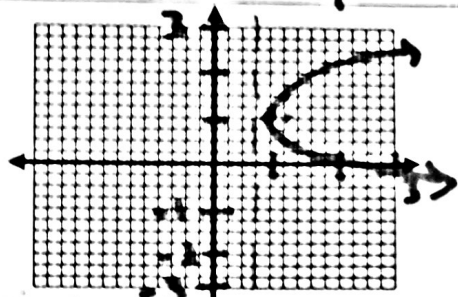


**C: (-4, 3)
R: $\sqrt{12} = 2\sqrt{3} \approx 3.5$**

Parabolas

1. $3(y+4) = (x+4)^2$

2. $x-1 = (y-1)^2$

Direction of Opening: \uparrow	Direction of Opening: \rightarrow
Vertex: $(-4, -4)$	Vertex: $(1, 1)$
Axis of Symmetry: $x = -4$	Axis of Symmetry: $y = 1$
Focus: $(-4, -4 + 3/4) = (-4, -3 1/4)$	Focus: $(1 + 1/4, 1) = (1 1/4, 1)$
Directrix: $y = -4 - 3/4 = -4 3/4$	Directrix: $x = 1 - 1/4 = 3/4$
Graph: 	Graph: 

$4p = 3$
 $p = 3/4$

$4p = 1$
 $p = 1/4$

3. Given $3x - y^2 = 8y + 31$. Name the coordinates of the vertex, focus, the equations of the axis of symmetry and directrix, and the direction of opening of the parabola.

$3x - 31 = y^2 + 8y \rightarrow 3x - 31 + 16 = y^2 + 8y + 16$
 $3x - 15 = (y+4)^2 \rightarrow 3(x-5) = (y+4)^2$
 V: $(5, -4)$
 F: $(5 3/4, -4)$
 AOS: $y = -4$
 D: $x = 11/4$

4. Graph $-2x^2 - 28x + y - 105 = 0$. Name the coordinates of the vertex, focus, the equations of the axis of symmetry and directrix, and the direction of opening of the parabola.

STANDARD FORM \curvearrowright V: $(-7, 203)$ AOS: $x = -7$
 f: $(-7, 202 1/8)$ D: $y = 203 1/8$
 $(x+7)^2 = -1/2(y-203)$

5. Write an equation for each parabola described below. Then graph.

a. focus: $(4, -3)$ $\rightarrow p = 7/2$
 directrix: $y = 4$

b. focus: $(3, 0)$ $\rightarrow p = 5/2$
 directrix: $x = -2$

c. vertex: $(1, 7)$ $\rightarrow p = 2$
 directrix: $y = 3$

$4p(y-k) = (x-h)^2$
 $-14(y - 1/2) = (x+3)^2$
 AOS: $x = -3$

$4p(x-h) = (y-k)^2$
 $10(x + 1/2) = y^2$

$4p(y-k) = (x-h)^2$
 $8(y-5) = (x-1)^2$

