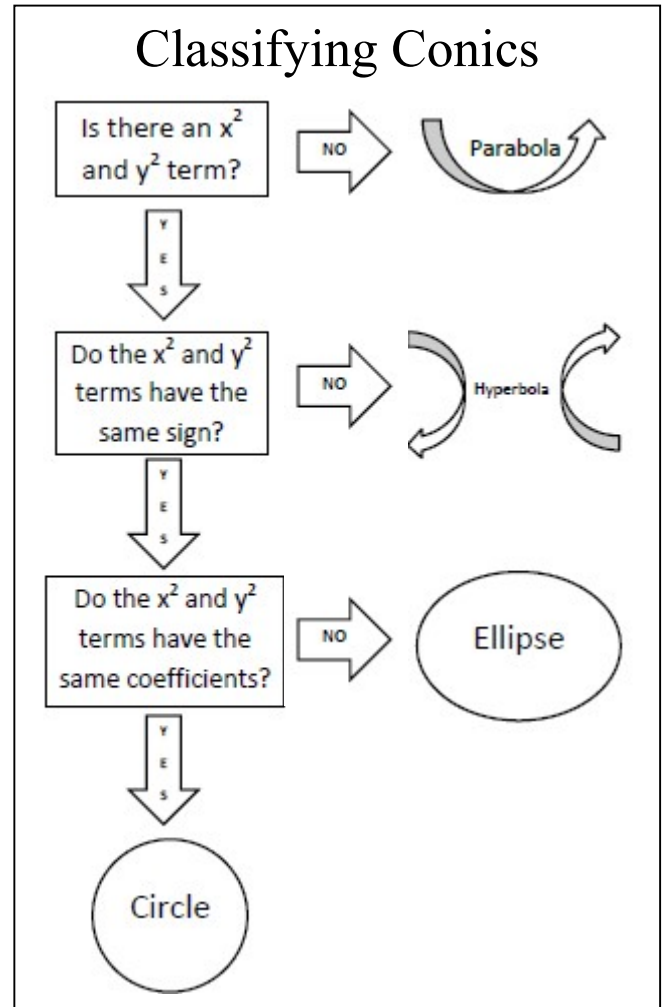


Classify each conic section as circle, ellipse, parabola, hyperbola or none of these.

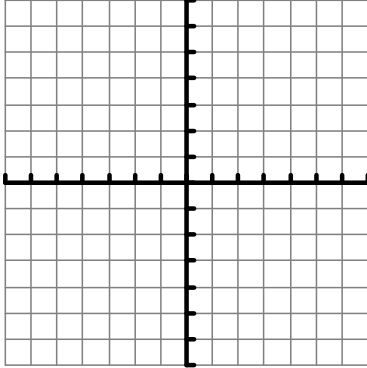
- \_\_\_\_\_ 1.  $x^2 + (y-3)^2 = 9$
- \_\_\_\_\_ 2.  $16x^2 - 9y^2 = 144$
- \_\_\_\_\_ 3.  $(x+2)^2 = -8(y-3)$
- \_\_\_\_\_ 4.  $(x+4)^2 + (y-1)^2 = 7$
- \_\_\_\_\_ 5.  $\frac{(y-2)^2}{4} - \frac{(x+3)^2}{9} = 1$
- \_\_\_\_\_ 6.  $x^2 - 4x + y^2 + 6y - 5 = 0$
- \_\_\_\_\_ 7.  $y^2 - 4x^2 + 32x - 6y + 1 = 80$
- \_\_\_\_\_ 8.  $y^2 + 2y + 2x - 1 = 0$
- \_\_\_\_\_ 9.  $\frac{(x-1)^2}{9} + \frac{(y-3)^2}{25} = 1$
- \_\_\_\_\_ 10.  $\frac{(y-2)^2}{25} - \frac{(x+3)^2}{4} = 1$
- \_\_\_\_\_ 11.  $x^2 + y^2 - 18x - 18y + 53 = 0$
- \_\_\_\_\_ 12.  $4x^2 + 9y^2 + 24x - 90y = -225$
- \_\_\_\_\_ 13.  $x^2 - 4y^2 - 4x + 24y - 36 = 0$
- \_\_\_\_\_ 14.  $3x^2 + 3y^2 + 18x - 6y + 3 = 0$
- \_\_\_\_\_ 15.  $\frac{(x+3)^2}{9} + \frac{(y-5)^2}{4} = 1$
- \_\_\_\_\_ 16.  $(y+4)^2 = 12(x+1)$
- \_\_\_\_\_ 17.  $9x^2 - 4y^2 + 36x - 8y - 40 = 0$
- \_\_\_\_\_ 18.  $9x^2 + 4y^2 + 36x - 8y + 4 = 0$
- \_\_\_\_\_ 19.  $9x^2 - 8y - 40 = -4y^2 + 36x$
- \_\_\_\_\_ 20.  $x^2 - 18x + 53 = y^2 - 18y$



Graph and provide the requested information:

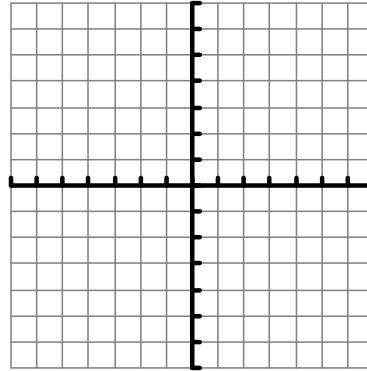
21.  $(x - 5)^2 + (y + 2)^2 = 5$

c = \_\_\_\_\_  
r = \_\_\_\_\_



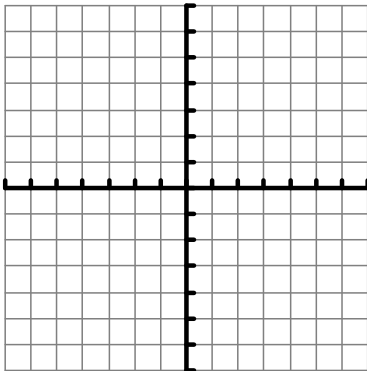
22.  $\frac{(x + 4)^2}{9} + \frac{(y - 2)^2}{4} = 1$

c = \_\_\_\_\_  
v = \_\_\_\_\_  
cv = \_\_\_\_\_  
f = \_\_\_\_\_  
major axis length = \_\_\_\_\_  
minor axis length = \_\_\_\_\_



23.  $\frac{(y + 4)^2}{9} - \frac{(x - 2)^2}{9} = 1$

c = \_\_\_\_\_  
v = \_\_\_\_\_  
f = \_\_\_\_\_  
asymptotes = \_\_\_\_\_  
length of transverse axis = \_\_\_\_\_



24.  $y^2 = -4(x - 3)$

v = \_\_\_\_\_  
f = \_\_\_\_\_  
directrix = \_\_\_\_\_  
length of LR = \_\_\_\_\_  
ends of LR = \_\_\_\_\_

