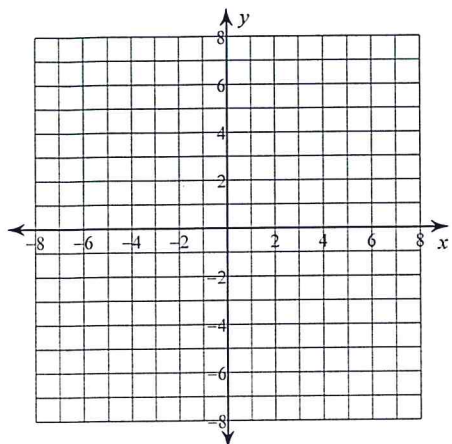


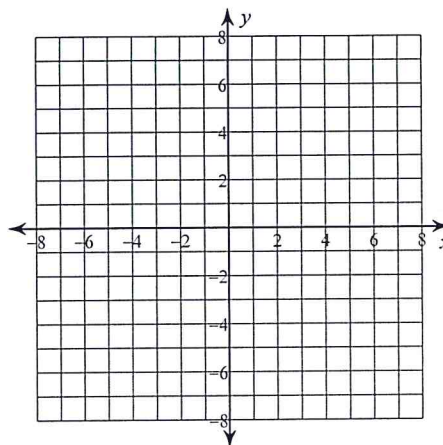
# Parabolas and Ellipses

Identify the vertex and focus of each. Then sketch the graph.

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



2)  $-3(y - 4) = (x + 5)^2$



Determine if each conic section is a parabola or an ellipse.

3)  $9x^2 + 4y^2 - 18x - 27 = 0$

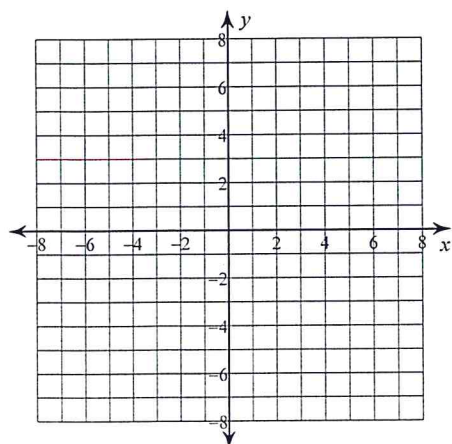
4)  $-x^2 + 2x + y - 5 = 0$

5)  $2y^2 + x + 8y + 3 = 0$

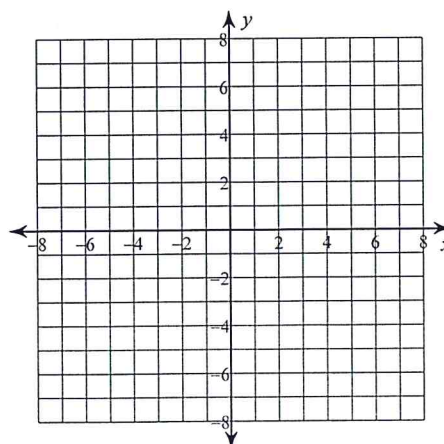
6)  $4x^2 + 25y^2 - 8x + 200y + 304 = 0$

Identify the center and vertices of each. Then sketch the graph.

7)  $\frac{x^2}{49} + \frac{(y + 2)^2}{4} = 1$



8)  $\frac{(x - 1)^2}{9} + \frac{y^2}{25} = 1$



Use the information provided to write the standard/conic form equation of each conic.

9) Vertices:  $(9, 16), (9, 0)$   
Co-vertices:  $(14, 8), (4, 8)$

10) Vertices:  $(1, 7), (-13, 7)$   
Co-vertices:  $(-6, 12), (-6, 2)$

11)  $-y^2 + 2x + 16y - 66 = 0$

12)  $x^2 + 12x + y + 27 = 0$

13) Foci:  $(3, 12), (3, 4)$   
Endpoints of major axis:  $(3, 13), (3, 3)$

14) Foci:  $(17, -2), (-7, -2)$   
Endpoints of major axis:  $(18, -2), (-8, -2)$

15) Vertex:  $(-9, 1)$ , Focus:  $\left(-\frac{27}{4}, 1\right)$

16) Vertex:  $(-1, 2)$ , Focus:  $\left(-1, \frac{11}{4}\right)$

17) Major axis is horizontal  
Center:  $(-7, 1)$   
Major axis is 18 units long  
Minor axis is 12 units long

18) Minor axis is vertical  
Center:  $(0, 4)$   
Major axis is 20 units long  
Minor axis is 18 units long

19) Vertex:  $(-2, 3)$ , Point:  $(0, 8)$ , Axis:  $x = -2$

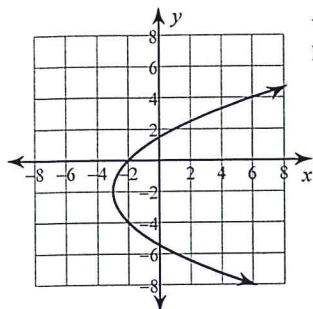
20) Vertex:  $(1, 9)$ , Point:  $(3, 15)$ , Axis:  $y = 9$

21) Foci:  $(-10, 12), (-10, 6)$   
Endpoints of minor axis:  $(-6, 9), (-14, 9)$

22) Foci:  $(20, 4), (-4, 4)$   
Endpoints of minor axis:  $(8, 9), (8, -1)$

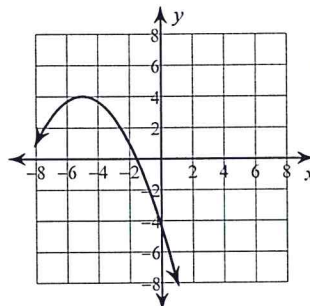
## Answers to Parabolas and Ellipses

1)



Vertex:  $(-3, -2)$   
Focus:  $(-2, -2)$

2)



Vertex:  $(-5, 4)$   
Focus:  $(-5, \frac{13}{4})$

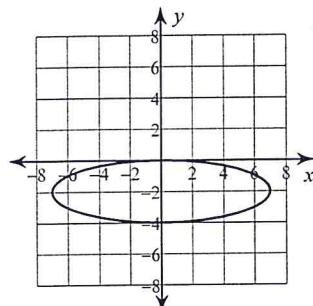
3) Ellipse

4) Parabola

5) Parabola

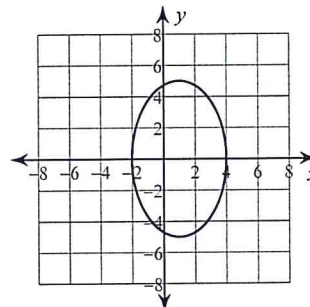
6) Ellipse

7)



Center:  $(0, -2)$   
Vertices:  $(7, -2)$   
 $(-7, -2)$

8)



Center:  $(1, 0)$   
Vertices:  $(1, 5)$   
 $(1, -5)$

9)  $\frac{(x-9)^2}{25} + \frac{(y-8)^2}{64} = 1$

10)  $\frac{(x+6)^2}{49} + \frac{(y-7)^2}{25} = 1$

11)  $2(x-1) = (y-8)^2$

12)  $-(y-9) = (x+6)^2$

13)  $\frac{(x-3)^2}{9} + \frac{(y-8)^2}{25} = 1$

14)  $\frac{(x-5)^2}{169} + \frac{(y+2)^2}{25} = 1$

15)  $9(x+9) = (y-1)^2$

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

17)  $\frac{(x+7)^2}{81} + \frac{(y-1)^2}{36} = 1$

18)  $\frac{x^2}{100} + \frac{(y-4)^2}{81} = 1$

19)  $\frac{4}{5}(y-3) = (x+2)^2$

20)  $9(x+1) = (y-9)^2$

21)  $\frac{(x+10)^2}{16} + \frac{(y-9)^2}{25} = 1$

22)  $\frac{(x-8)^2}{169} + \frac{(y-4)^2}{25} = 1$