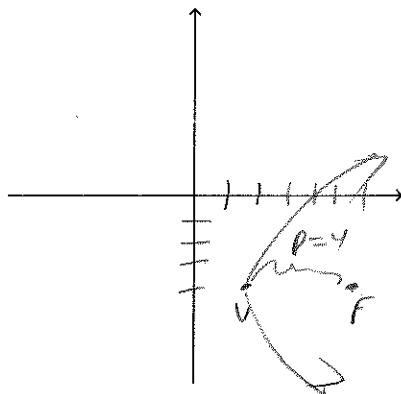


#1. Find the equation of the parabola with focus (6, -4) and vertex (2, -4)

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

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

$$\boxed{(y+4)^2 = 16(x-2)}$$



#2. Graph the equation (label important features):  $\frac{(y-1)^2}{9} - \frac{(x+2)^2}{4} = 1$

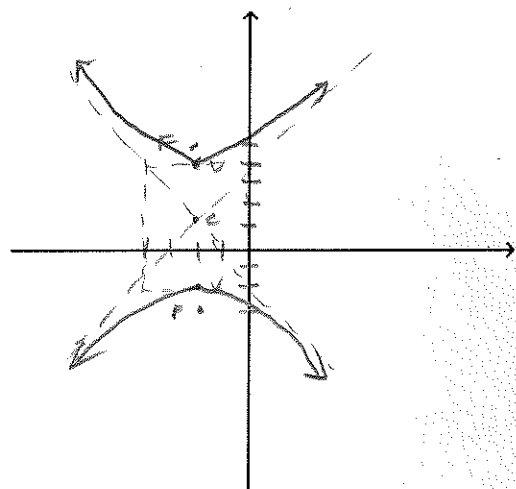
Center:  $(-2, 1)$

Vertices:  $(-2, 4)$   $(-2, -2)$

Foci:  $(-2, 1+\sqrt{13})$   $(-2, 1-\sqrt{13})$

Asymptotes:  $(y-1) = \frac{3}{2}(x+2)$   
 $(y-1) = -\frac{3}{2}(x+2)$

hyperbola  
 $a^2 = 9, a = 3$   
 $b^2 = 4, b = 2$   
 $c^2 = a^2 + b^2$   
 $c^2 = 9 + 4 = 13$   
 $c = \sqrt{13} \approx 3.6$

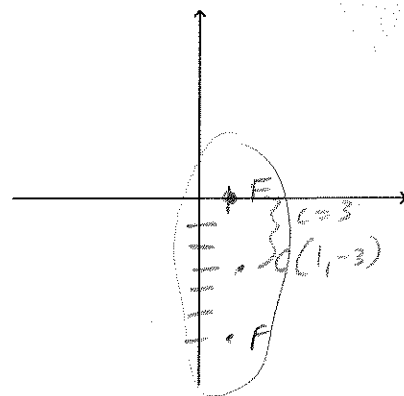


#3. Find an equation of the ellipse with major axis 10 units long and foci at (1, 0) and (1, -6)

$c = 3$   
 $c^2 = a^2 - b^2$   
 $9 = 25 - b^2$   
 $b^2 = 25 - 9$   
 $b^2 = 16$

$$\frac{(x-h)^2}{b^2} + \frac{(y-k)^2}{a^2} = 1$$

$$\boxed{\frac{(x-1)^2}{16} + \frac{(y+3)^2}{25} = 1}$$



#4. Graph the equation (label important features):  $\frac{(x+2)^2}{49} + \frac{(y-1)^2}{4} = 1$

ellipse

$$a^2 = 49, a = 7$$

$$b^2 = 4, b = 2$$

$$c^2 = a^2 - b^2$$

$$c^2 = 49 - 4 = 45$$

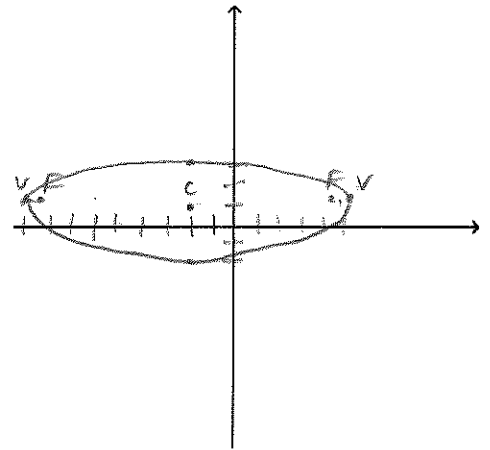
$$c = \sqrt{45} \quad (26.7)$$

Center:  $(-2, 1)$

Vertices:  $(5, 1)$   $(-9, 1)$

Foci:  $(-2 + \frac{\sqrt{45}}{1}, 1)$   $(-2 - \frac{\sqrt{45}}{1}, 1)$

Eccentricity:  $\frac{\sqrt{45}}{7}$



#5. Put the equation in standard form.  $8x = y^2 - 4y - 4$

$$y^2 - 4y = 8x + 4$$

$$(y^2 - 4y + 4) = 8x + 4 + 4$$

$$(y-2)^2 = 8x + 8$$

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

(parabola)

Tell which conic is represented by the equation.

#6.  $6x^2 - 16y^2 - 3x - 5y + 3 = 0$  Hyperbola

#7.  $-2x^2 + 3x + 4y - 10 = 0$  Parabola

#8.  $-4x^2 + 6y^2 - 3x + 2y - 4 = 0$  Hyperbola

#9.  $2x^2 - 3x - 2y - 12 = 0$  Parabola

#10.  $8x^2 + 8y^2 + 2y - 6 = 0$  Circle

#11.  $12x^2 + 7y^2 + 3x + 4y + 6 = 0$  Ellipse

#12. Put the equation in standard form.  $x^2 + 25y^2 - 6x + 100y + 84 = 0$

$$x^2 - 6x + 25y^2 + 100y = -84$$

$$(x^2 - 6x + 9) + 25(y^2 + 4y + 4) = -84 + 9 + 100$$


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

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

$$\frac{(x-3)^2}{25} + \frac{(y+2)^2}{1} = 1 \quad (\text{ellipse})$$

#13. Graph the equation (label important features)

$$(x+3)^2 = 8(y-1)$$

parabola 

Vertex:  $(-3, 1)$

$4p = 8$   
 $p = 2$

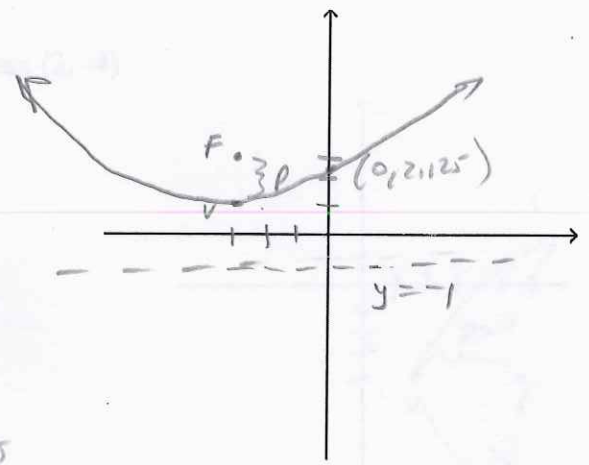
Focus:  $(-3, 3)$

y-int (x=0)

Directrix:  $y = -1$

$(0+3)^2 = 8(y-1)$

$9 = 8y - 8$   
 $17 = 8y$   
 $y = \frac{17}{8} \approx 2.125$

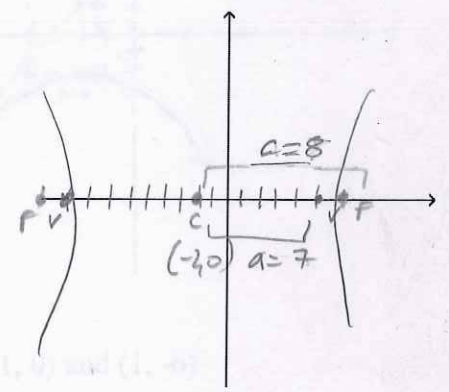


#14. Find an equation of the hyperbola with vertices  $(-9, 0)$  and  $(5, 0)$  and foci  $(-10, 0)$  and  $(6, 0)$ .

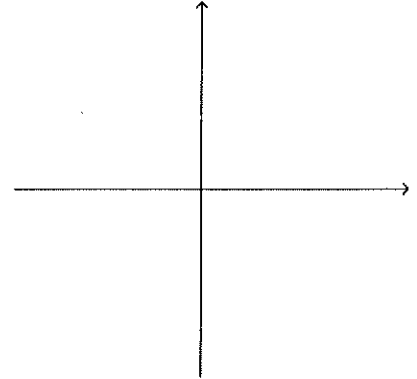
$$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$$

$c^2 = a^2 + b^2$   
 $64 = 49 + b^2$   
 $b^2 = 64 - 49$   
 $b^2 = 15$

$$\frac{(x+2)^2}{49} - \frac{y^2}{15} = 1$$



#1. Find the equation of the parabola with focus (6, -4) and vertex (2, -4)



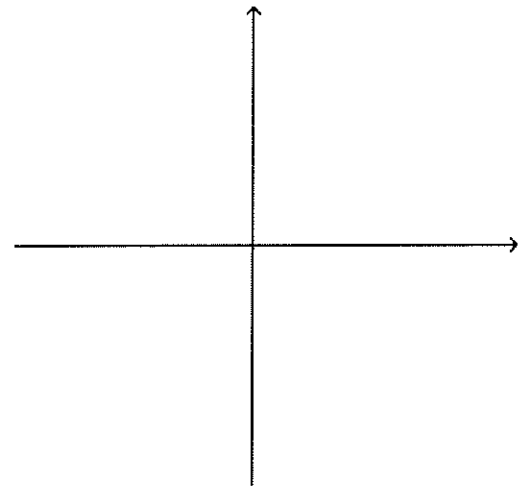
#2. Graph the equation (label important features):  $\frac{(y-1)^2}{9} - \frac{(x+2)^2}{4} = 1$

Center: \_\_\_\_\_

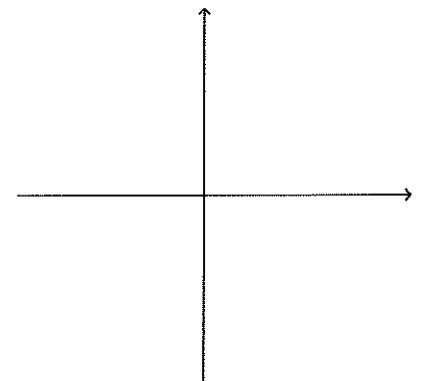
Vertices: \_\_\_\_\_

Foci: \_\_\_\_\_

Asymptotes: \_\_\_\_\_



#3. Find an equation of the ellipse with major axis 10 units long and foci at (1, 0) and (1, -6)



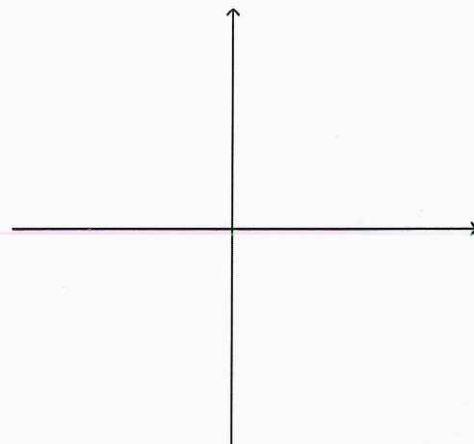
#4. Graph the equation (label important features):  $\frac{(x+2)^2}{49} + \frac{(y-1)^2}{4} = 1$

Center: \_\_\_\_\_

Vertices: \_\_\_\_\_

Foci: \_\_\_\_\_

Eccentricity: \_\_\_\_\_



#5. Put the equation in standard form.  $8x = y^2 - 4y - 4$

Tell which conic is represented by the equation.

#6.  $6x^2 - 6y^2 - 3x - 5y + 3 = 0$

#7.  $-2x^2 + 3x + 4y - 10 = 0$

#8.  $-4x^2 + 6y^2 - 3x + 2y - 4 = 0$

#9.  $2x^2 - 3x - 2y - 12 = 0$

#10.  $8x^2 + 8y^2 + 2y - 6 = 0$

#11.  $12x^2 + 7y^2 + 3x + 4y + 6 = 0$

#12. Put the equation in standard form.  $x^2 + 25y^2 - 6x + 100y + 84 = 0$

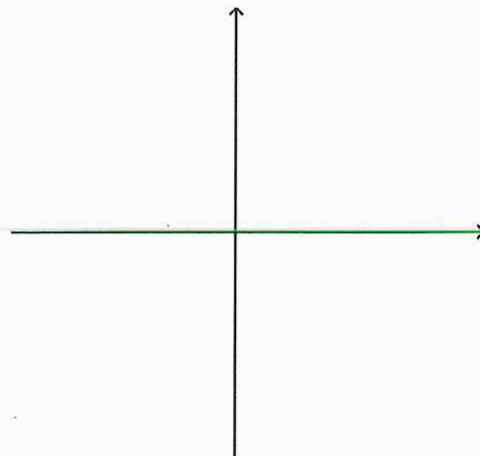
#13. Graph the equation (label important features)

$$(x+3)^2 = 8(y-1)$$

Vertex: \_\_\_\_\_

Focus: \_\_\_\_\_

Directrix: \_\_\_\_\_



#14. Find an equation of the hyperbola with vertices  $(-9, 0)$  and  $(5, 0)$  and foci  $(-10, 0)$  and  $(6, 0)$ .

