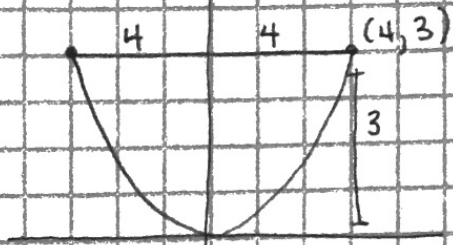


11.



Find the focus

$$x^2 = 4py$$

$$4^2 = 4p(3)$$

$$\frac{16}{12} = p$$

$$\frac{4}{3} = p$$

1.33 ft above vertex

13.  $4x^2 + y^2 - 8x + 4y + 4 = 0$

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

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

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

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

14.  $2x^2 - y^2 + 12x + 2y + 4 = 1$

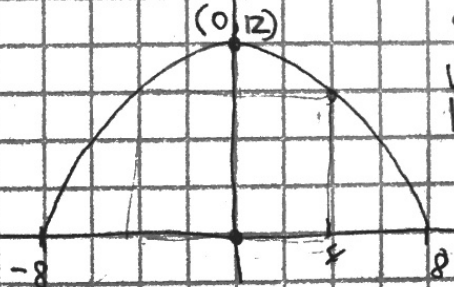
$$2x^2 + 12x - y^2 + 2y = -3$$

$$2(x^2 + 6x + 9) - (y^2 - 2y + 1) = -3 + 18 - 1$$

$$\frac{2(x+3)^2}{14} - \frac{(y-1)^2}{14} = \frac{14}{14}$$

$$\boxed{\frac{(x+3)^2}{7} - \frac{(y-1)^2}{14} = 1}$$

12.



8x10  
width of 8  
height of 10

$$\frac{x^2}{144} + \frac{(y-12)^2}{64} = 1$$

If  $x=4$ , find  $h$

$$\frac{4^2}{144} + \frac{(y-12)^2}{64} = 1$$

$$\frac{(y-12)^2}{64} = \frac{8}{9}$$

$$(y-12)^2 = \frac{512}{9}$$

$$y-12 = \pm \sqrt{\frac{512}{9}}$$

$$y = 12 \pm \sqrt{\frac{512}{9}}$$

$$y = 4.458 \text{ or } 19.542$$

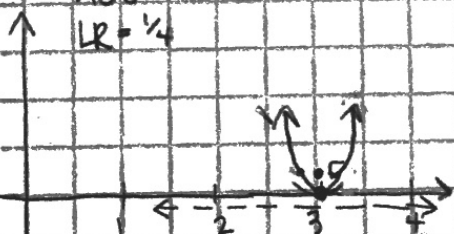
height would be  
4.458  $\rightarrow$  truck doesn't pass

# 7.11 Conics Review

- $x^2 - 2y^2 = 8$  hyperbola
- $x + \frac{1}{2}y^2 = 4$  parabola
- $x^2 = 8 - 2y^2$  ellipse

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

parabola  
 $(x-3)^2 = \frac{1}{4}y$   
 opens up  
 vertex  $(3, 0)$   
 $4p = \frac{1}{4}$   
 $p = \frac{1}{16}$   
 focus  $(3, \frac{1}{16})$   
 directrix  $y = -\frac{1}{16}$   
 AOS  $x = 3$   
 LR =  $\frac{1}{4}$



6.  $\frac{9x^2}{9} - \frac{y^2}{9} = \frac{9}{9}$

$x^2 - \frac{y^2}{9} = 1$

opens L/R

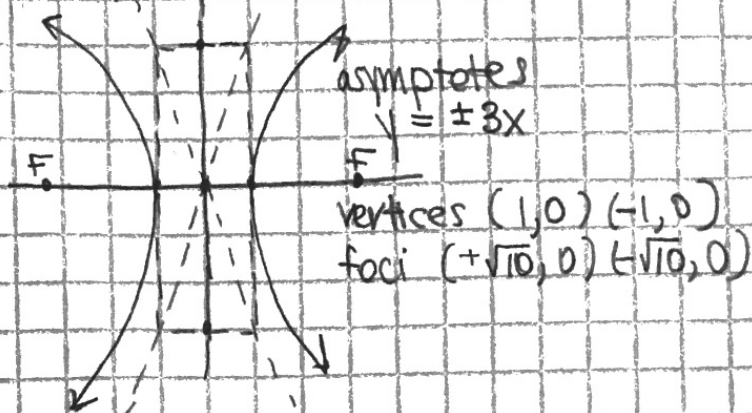
hyperbola

center  $(0, 0)$

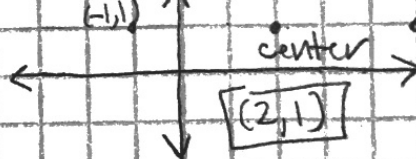
$a^2 = 1$   $a = 1$

$b^2 = 9$   $b = 3$

$c^2 = 1 + 9 = \sqrt{10} \approx 3.162$



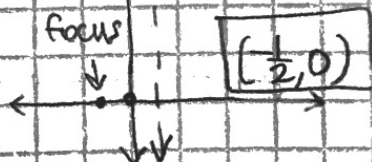
7. foci  $(5, 1)$   $(-1, 1)$



8.  $b^2 = 10$

$b = \sqrt{10}$   
 $2\sqrt{10}$

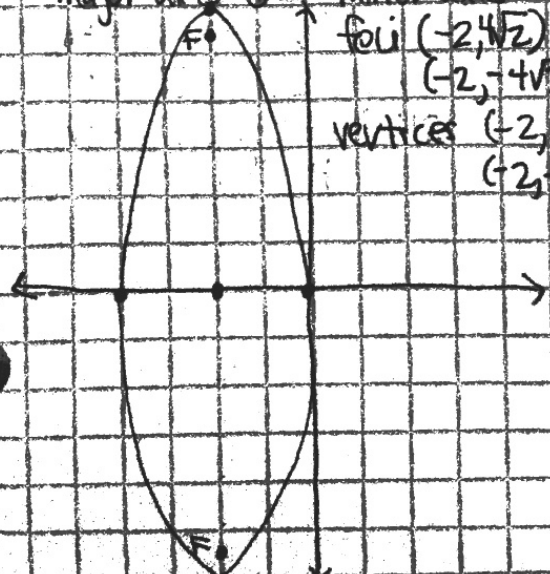
9. directrix  $x = \frac{1}{2}$   
 vertex  $(0, 0)$



5.  $\frac{(x+2)^2}{4} + \frac{y^2}{36} = 1$

ellipse  
 center  $(-2, 0)$   
 vertical major axis  
 major axis 6  
 minor axis 2  
 $a^2 = 36$   $a = 6$   
 $b^2 = 4$   $b = 2$   
 $c^2 = 32$   $c = 4\sqrt{2} \approx 5.657$

foci  $(-2, \sqrt{2})$   
 $(-2, -\sqrt{2})$   
 vertices  $(-2, 6)$   
 $(-2, -6)$



10.  $(-13, -2)$   $(-4, -2)$

midpoint  $(\frac{-13 + -4}{2}, \frac{-2 + -2}{2})$

center  $(-8.5, -2)$

diameter:  $-4 - (-13) = 9$

radius  $\frac{9}{2}$