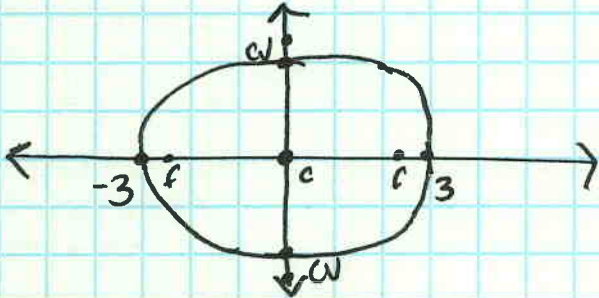


474: 22-29, 57

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

↔

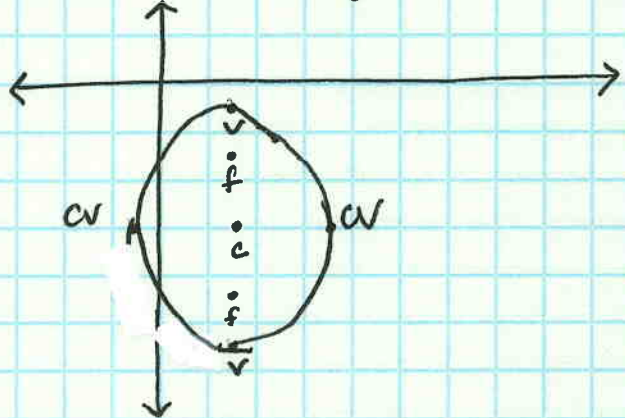
Center (0,0)  $c = \sqrt{5}$   
 $V(-3,0) (3,0)$   $c \approx 2.4$   
 $F(-2.5,0) (2.5,0)$   
 $CV(0,-2) (0,2)$



$$23. \frac{(x-3)^2}{16} + \frac{(y+6)^2}{25} = 1$$

$b=4$        $a=5$        $c=3$

Center (3,-6)  
 $V(+3,-1) (3,-11)$   
 $F(3,-3) (3,-9)$   
 $CV(7,-6) (-1,-6)$



$$24. V(7,-3) (3,-3)$$

$$F(6,-3) (4,-3)$$

$$2a = 4 \quad a = 2$$

$$2b = 2 \quad b = 1$$

$$h,k = (5,-3)$$

$$\boxed{\frac{(x-5)^2}{4} + \frac{(y+3)^2}{1} = 1}$$

$$26. \text{Maj } A (-4,4) (6,4)$$

$$\text{min } A (1,1) (1,7)$$

$$(h,k) = (1,4)$$

$$2a = 10 \quad a = 5$$

$$2b = 6 \quad b = 3$$

$$\boxed{\frac{(x-1)^2}{25} + \frac{(y-4)^2}{9} = 1}$$

$$25. F(1,2) (9,2) \text{ min } A = 6$$

$$\leftrightarrow 2a = 8 \quad a = 4 \quad b = 3$$

$$(h,k) = (5,2)$$

$$\boxed{\frac{(x-5)^2}{16} + \frac{(y-2)^2}{9} = 1}$$

$$27. x^2 - 2x + y^2 - 4y - 25 = 0$$

$$(x^2 - 2x + 1) + (y^2 - 4y + 4) - 1 - 4 = 25$$

$$(x-1)^2 + (y-2)^2 = 30$$

circle

$$28. \quad 4x^2 + 24x + 25y^2 - 200y + 836 = 6$$

$$4(x^2 + 6x + 9 - 9) + 25(y^2 - 12y + 36 - 36) + 836 = 0$$

$$4(x+3)^2 - 36 + 25(y-6)^2 - 900 + 836 = 0$$

$$\quad \quad \quad +36 \quad \quad \quad +900 - 836 = 100$$

$$\boxed{\frac{(x+3)^2}{25} + \frac{(y-6)^2}{4} = 1 \quad \text{ellipse}}$$

$$29 \quad x^2 - 4x + 4y + 24 = 0$$

$$x^2 - 4x = -4y - 24$$

$$x^2 - 4x + 4 = -4y - 24 + 4$$

$$(x-2)^2 = -4y - 20$$

$$\boxed{(x-2)^2 = -4(y+5)}$$

parabola

57. radii expand at 3 in/s

a) at 10 s,  $r = 30$  in

$$x^2 + y^2 = 900$$

b)  $r^2 = 225$ ,  $r = 15$  in

5 seconds after the rock  
was dropped