

# Math 112

Q's

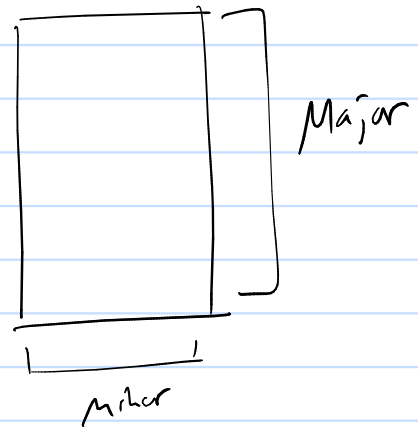
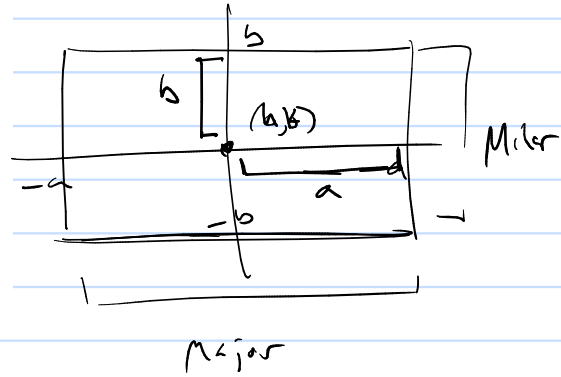
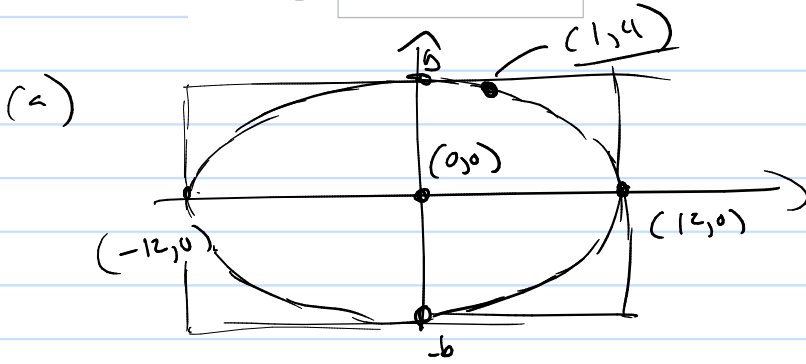
6 Find an equation for the ellipse that satisfies the following conditions.

(a) Ends of major axis  $(\pm 12, 0)$  and passes through  $(1, 4)$ .

1 =

(b) Foci  $(1, 2)$  and  $(1, 4)$ ; minor axis of length 12.

1 =



ellipse:

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

$$h=0, k=0, a=12$$

$$\frac{x^2}{12^2} + \frac{y^2}{b^2} = 1$$

use  $(1, 4)$  to find  $b$

$$\frac{(1)^2}{12^2} + \frac{(4)^2}{b^2} = 1$$

$$\text{so } \frac{1}{12^2} + \frac{4^2}{b^2} = 1 \Rightarrow \frac{4^2}{b^2} = 1 - \frac{1}{12^2} \rightarrow \frac{4^2}{b^2} = \frac{143}{12^2}$$

$$\frac{b^2}{4^2} = \frac{12^2}{143} \Rightarrow b^2 = \frac{4^2 \cdot 12^2}{143} \rightarrow b = \frac{4 \cdot 12}{\sqrt{143}}$$

$$b = \frac{48}{\sqrt{143}}$$

6 Find an equation for the ellipse that satisfies the following conditions.

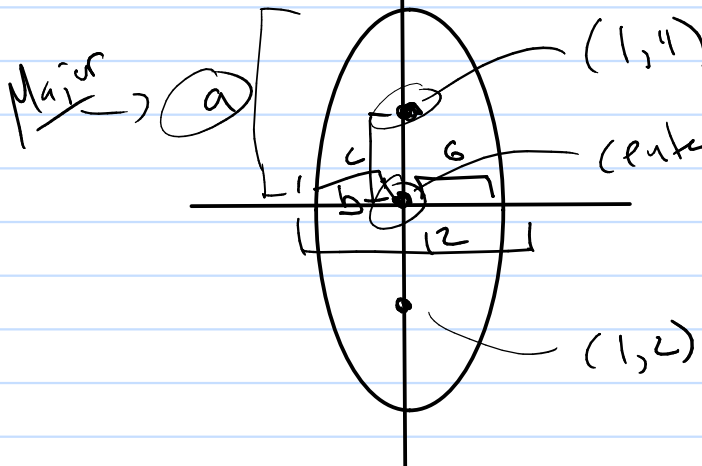
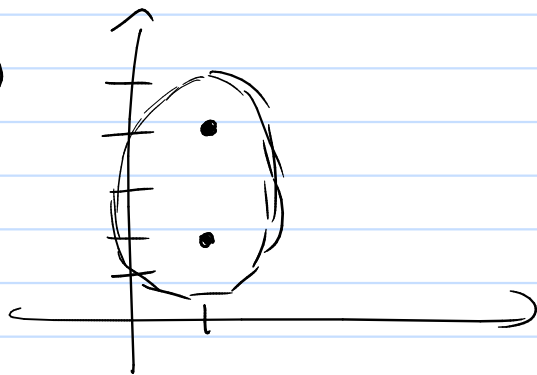
(a) Ends of major axis  $(\pm 12, 0)$  and passes through  $(1, 4)$ .

1 =

(b) Foci  $(1, 2)$  and  $(1, 4)$ ; minor axis of length 12.

1 =

(b)



$$\frac{(x-1)^2}{6^2} + \frac{(y-3)^2}{a^2} = 1$$

$$\frac{(x-1)^2}{6^2} + \frac{(y-3)^2}{9^2} = 1$$

$$\frac{(x-1)^2}{36} + \frac{(y-3)^2}{37} = 1$$

$$a^2 = b^2 + c^2 \quad \rightarrow \quad b^2 = 37$$

$$a^2 = 6^2 + 9^2$$

7.3 # 7

Find the focus, directrix, and focal diameter of the parabola  $30x + 3y^2 = 0$ :

its focus is (  ,  )

its directrix  $x =$   ,

its focal diameter is  ,

$$30x + 3y^2 = 0$$

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

so

$$4px = y^2$$

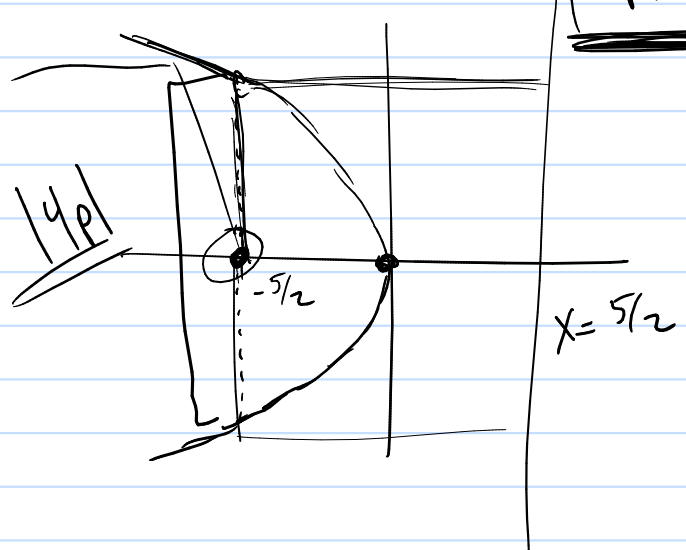
$$30x + 3y^2 = 0$$

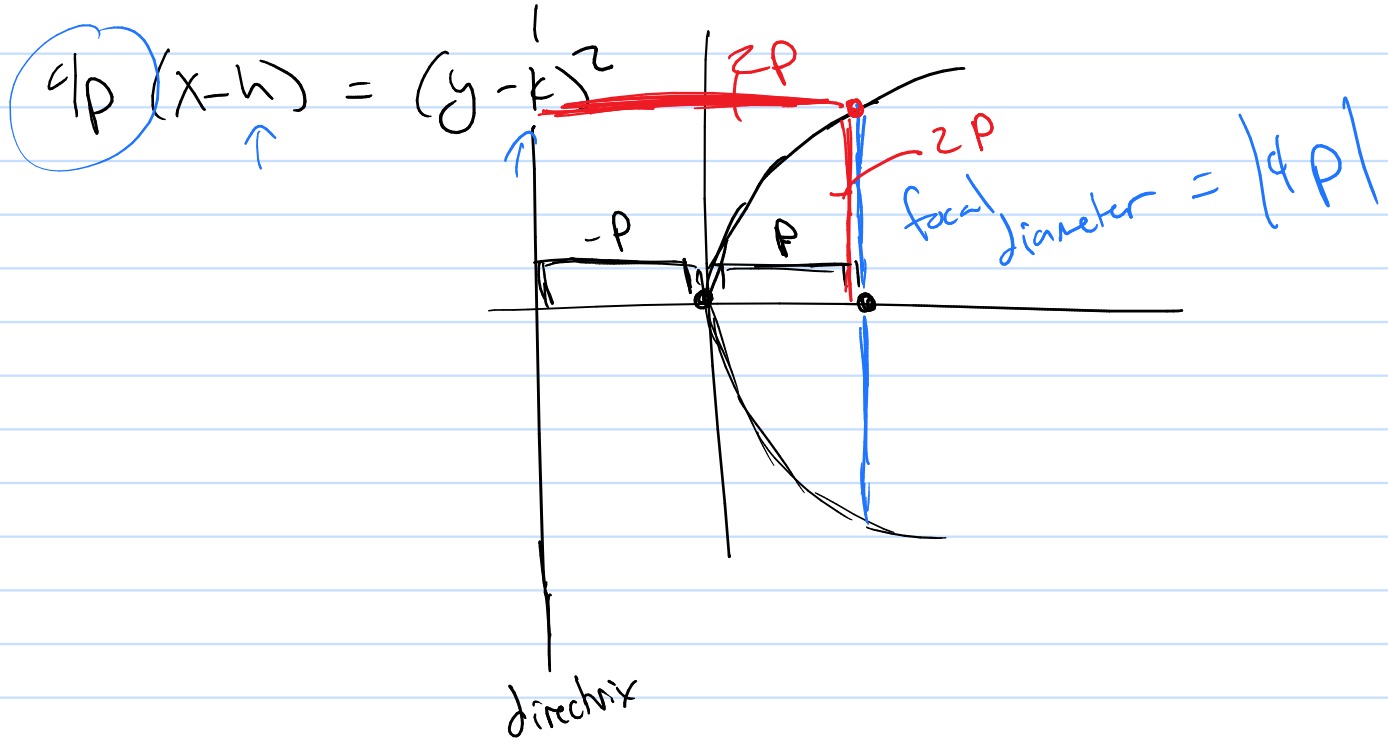
$$10x + y^2 = 0$$

$$-10x = y^2$$

$$4p = -10$$

know





Wed take home exam due thurs.

ch 9 / ch 7

- 9.1 Seg's 2 probs (1) function  $\rightarrow$  seg  
 (2) seg  $\rightarrow$  function?
- 9.2 series 2 probs (1)(2) do the sum
- 9.3 Binomial Th<sup>m</sup> 2 probs like hw.

sky in fractional  $\rightarrow$   $\frac{3!}{2!1!} = 3$

- 7.2  
 7.3  
 7.4  
 7.5
- 5 probs

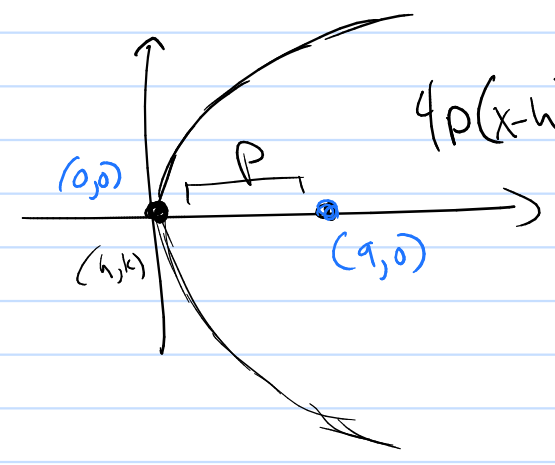
- (1)(2) circles  
 (3) parabola  
 (4) ellipse  
 (5) hyperbola.

Q

Parabola

vertex  $(0,0)$

focus  $(9,0)$

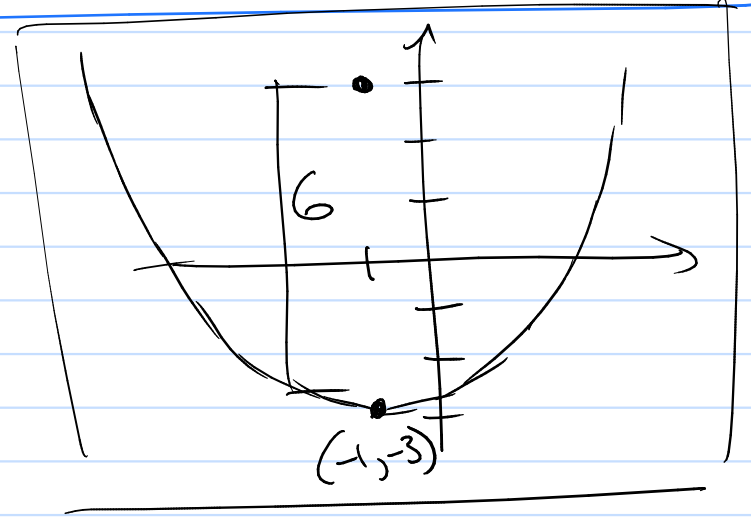


$$4 \cdot 9 x = y^2$$

$$\boxed{36x = y^2}$$

ex

Vertex $(-1, -3)$
Focus $(-1, 3)$



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

$$4 \cdot 6(y+3) = (x+1)^2$$

$$\boxed{24(y+3) = (x+1)^2}$$

ex

$$24y + 72 = x^2 + 2x + 1$$

$$\rightarrow x^2 + 2x - 24y = 71$$

Q

graph and write a parabola in std. form

given  $\boxed{x^2 + 2x - 24y = 71}$

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