

## Soluciones Tema 9      Lugares geométricos. Cónicas

Pág. 215    1. a)  $3x + y - 2 = 0$       b)  $(x + 3)^2 + (y - 4)^2 = 25$

c)  $(5\sqrt{5} - \sqrt{26})x + (\sqrt{5} + 2\sqrt{26})y + 3\sqrt{5} - 16\sqrt{26} = 0$

$(5\sqrt{5} + \sqrt{26})x + (\sqrt{5} - 2\sqrt{26})y + 3\sqrt{5} + 16\sqrt{26} = 0$

Pág. 217    1)  $(x + 5)^2 + (y - 12)^2 = 169$       2. Circunferencia  $(x - 3)^2 + y^2 = 9$

Pág. 218    3)  $d(C, s_1) = 5 = r \Rightarrow$  tan gentes,  $d(C, s_2) = \frac{59\sqrt{89}}{89} > r \Rightarrow$  exterior

$d(C, s_3) = 0 < r \Rightarrow$  sec ante, es un diámetro;  $d(C, s_4) = 2 < r \Rightarrow$  sec ante

4)  $b = \pm 3\sqrt{2}$

5)  $d(C, r_1) = \frac{1}{\sqrt{2}} < r = 5 \Rightarrow$  sec ante,  $d(C, r_2) = 4 < r \Rightarrow$  sec ante

$d(C, r_3) = 5 = r \Rightarrow$  tan gente,  $d(C, r_4) = 2 < r \Rightarrow$  sec ante

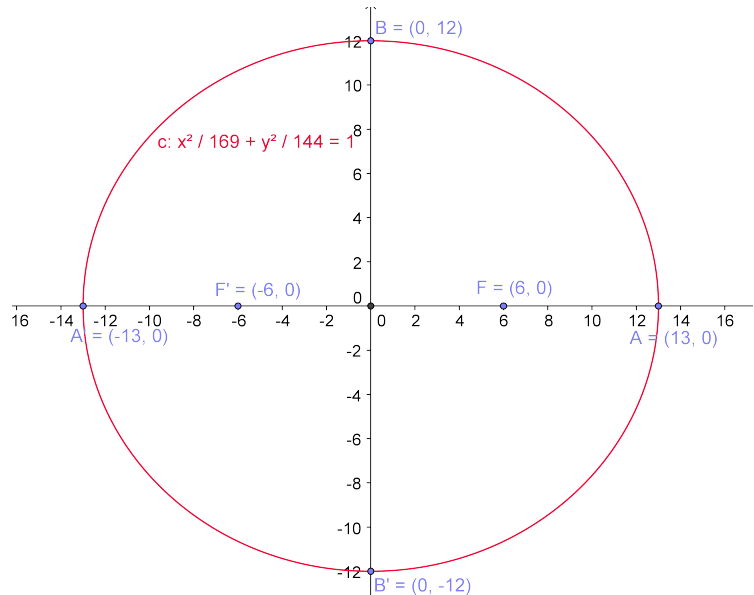
Pág. 219    **NO**

Pág. 223    1.  $a = 13$

$c = 5$

$b = 12$

$e = 5 / 13$

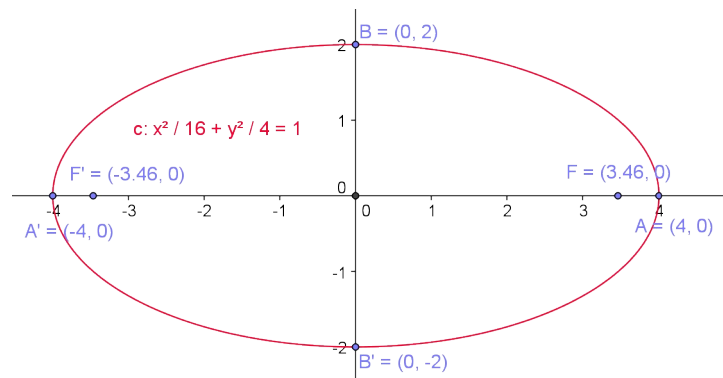


Pág. 224    2.  $a = 4$

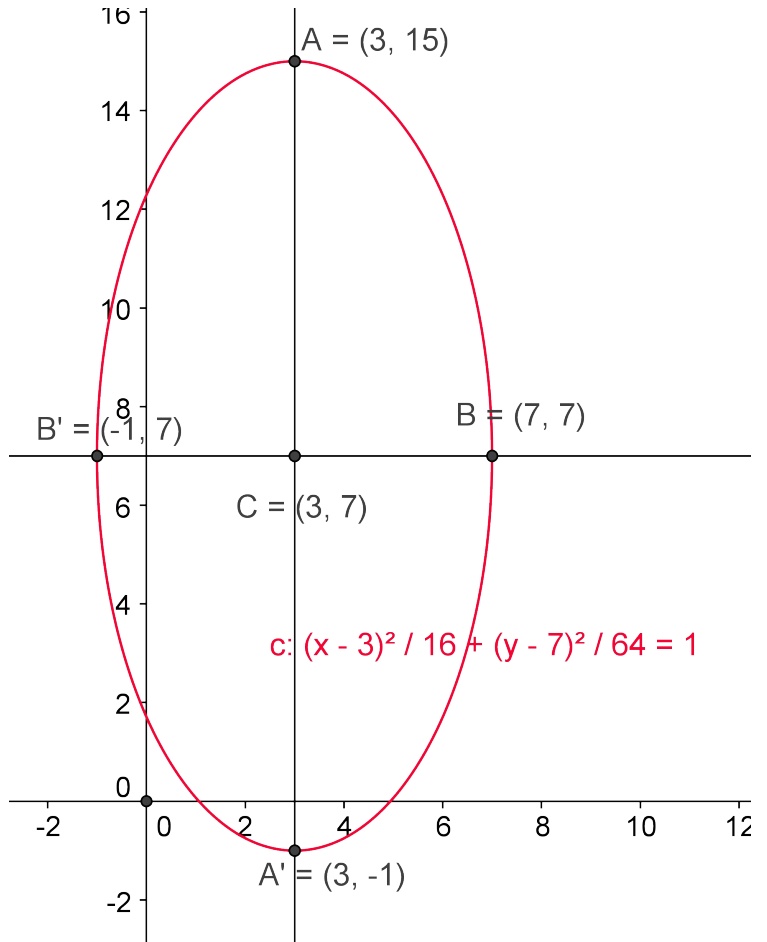
$b = 2$

$c = 2\sqrt{3}$

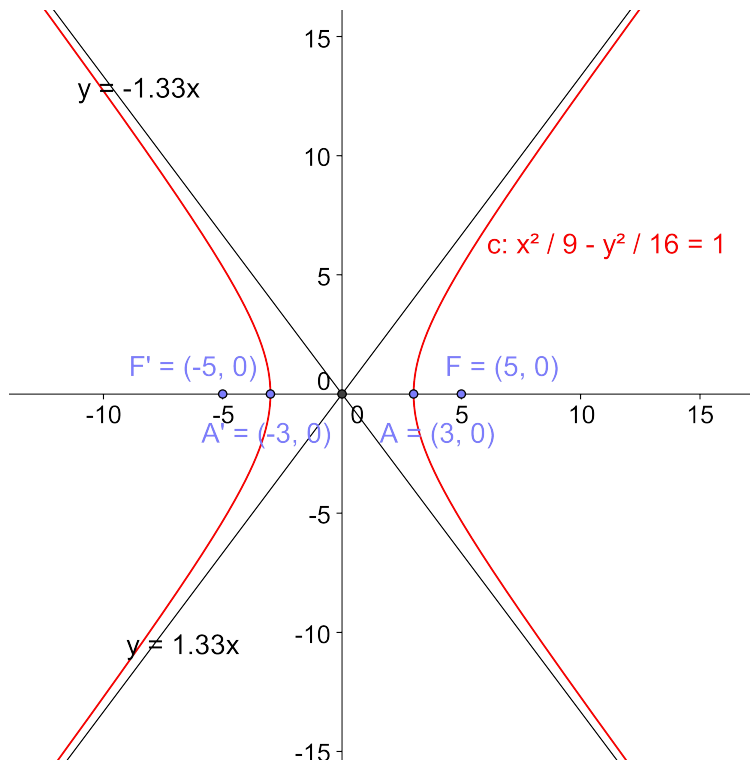
$e = \frac{\sqrt{3}}{2}$



Pág. 224 3.  $a = 8$   
 $b = 4$   
 $c = 4\sqrt{3}$   
 $e = \frac{\sqrt{3}}{2}$



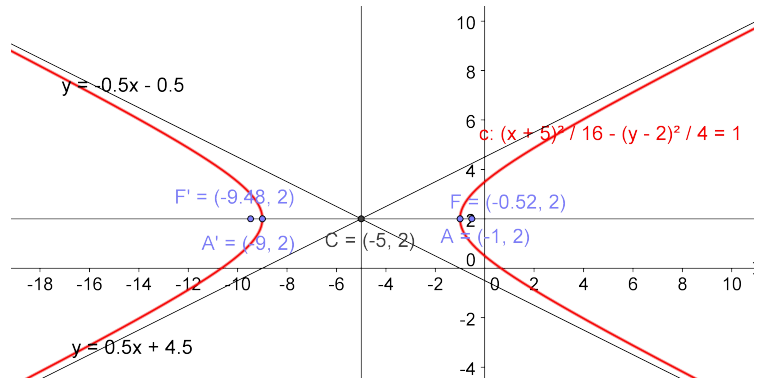
Pág. 226 1.  $a = 3$   
 $b = 4$   
 $c = 5$   
 $e = \frac{5}{3}$



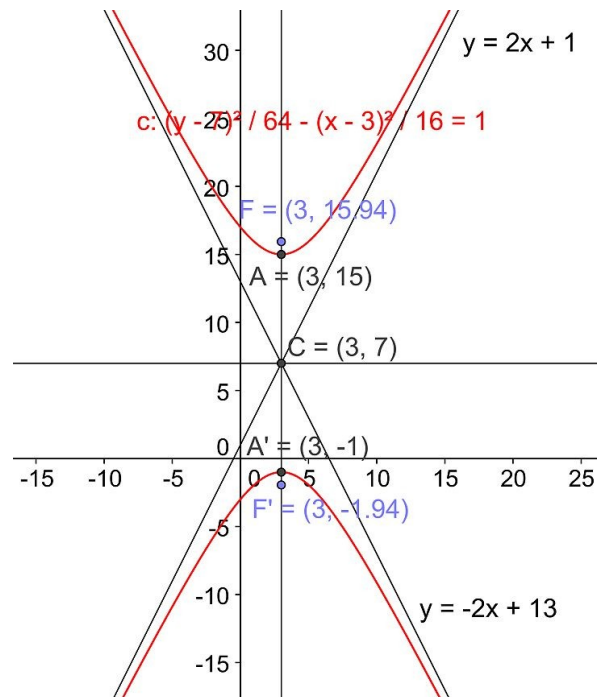
## Soluciones Tema 9

## Lugares geométricos. Cónicas

Pág. 227 2.  $a = 4$   
 $b = 2$   
 $c = 2\sqrt{5}$   
 $e = \frac{\sqrt{5}}{2}$



Pág. 227 3.  $a = 8$   
 $b = 4$   
 $c = 4\sqrt{5}$   
 $e = \frac{\sqrt{5}}{2}$



Pág. 228 1.  $y^2 = 6x$

2.  $x^2 = 8y$

Pág. 235 1. a)  $x - y - 5 = 0$       b)  $x = -\frac{1}{2}$       c)  $y = 3$

2.  $2x + y - 10 = 0$

3.  $4x - 3y - 19 = 0$     y     $4x - 3y + 41 = 0$

4.  $3x - 5y + 7 = 0$     Recta paralela a las dadas

5.  $8x + 64y - 139 = 0$     y     $112x - 14y + 69 = 0$

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

7. a)  $C(0,0)$   $r = \sqrt{5}$      $x^2 + y^2 = 0$     b)  $(x - 2)^2 + y^2 = \frac{25}{4}$

c)  $(x + 2)^2 + \left(y + \frac{3}{2}\right)^2 = \frac{1}{4}$



## Soluciones Tema 9      Lugares geométricos. Cónicas

8. a)  $C(4, -1)$   $r = \sqrt{7}$     b) y c) No    d)  $C(4, 0)$   $r = 2$     e)  $C(-3, -5)$   $r = 2$

Pág. 235 9. a)  $(x + 2)^2 + (y - 1)^2 = 29$     b)  $(x - 2)^2 + (y - 4)^2 = 5$   
 c)  $(x + 1)^2 + (y + 5)^2 = 25$     d)  $(x - 3)^2 + (y - 5)^2 = 25$

10. Exterior

11.  $r_1$  secante,  $r_2$  exterior,  $r_3$  tangente

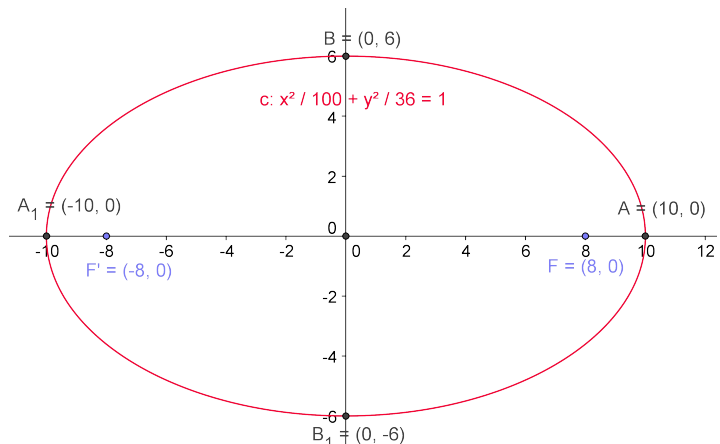
12.  $b = \pm \sqrt{2}$

13.  $\frac{2\sqrt{5}}{5} < \sqrt{2}$ , son secantes

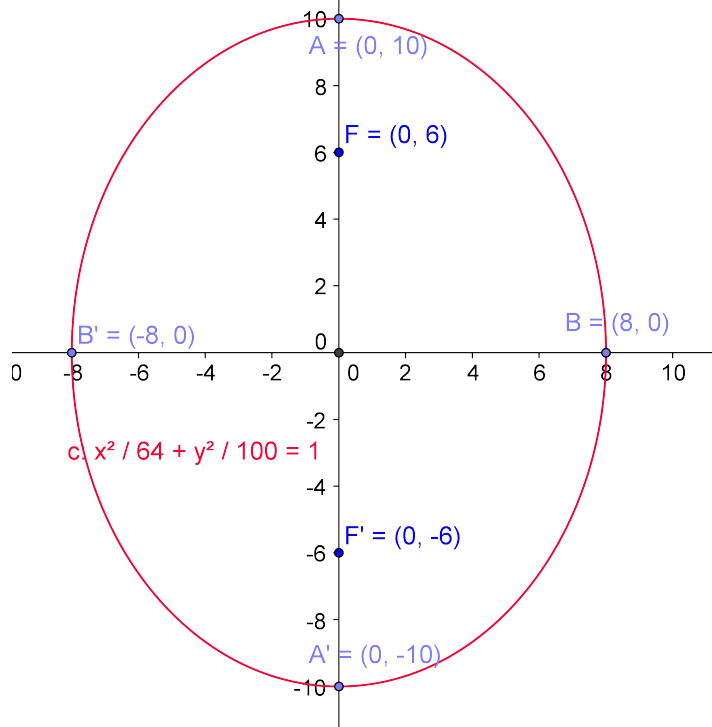
14. No

Pág. 236 15. No

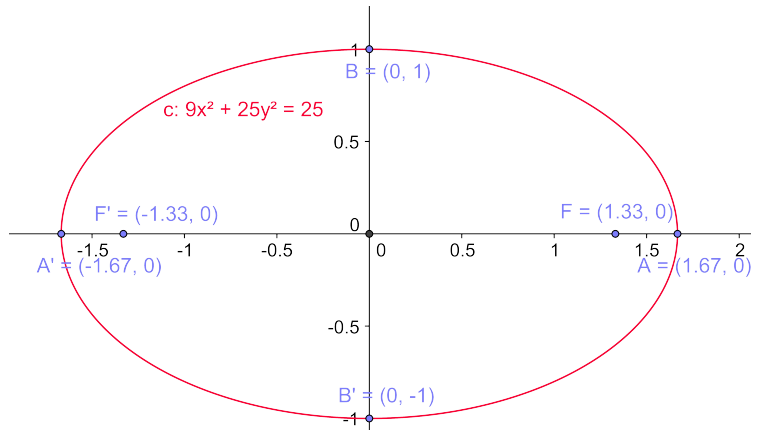
16. a)  $a = 10$   
 $b = 6$   
 $c = 8$   
 $e = \frac{4}{5}$



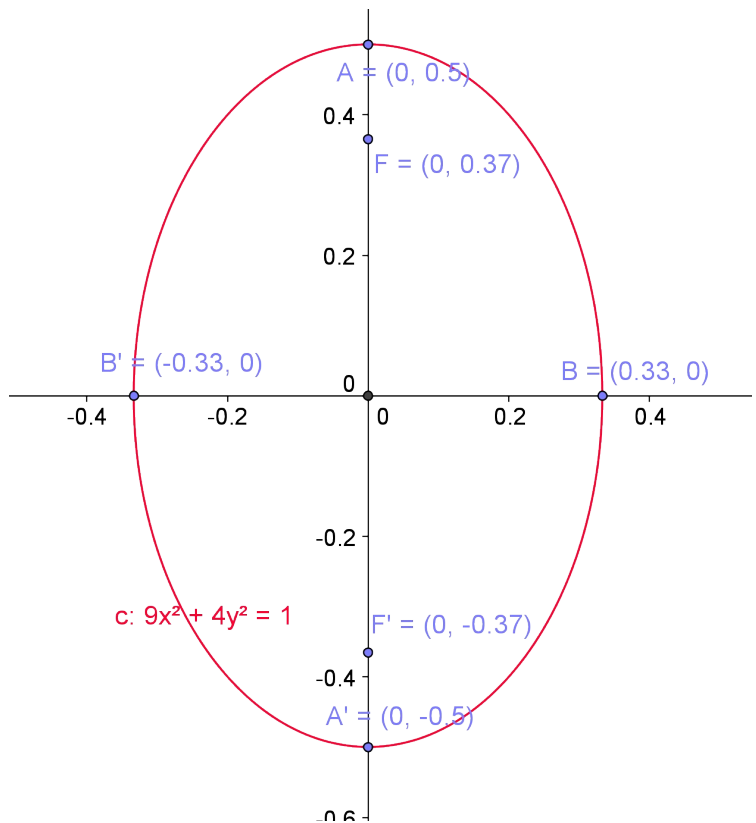
16. b)  $a = 10$   
 $b = 8$   
 $c = 6$   
 $e = \frac{3}{5}$



Pág. 236 16. c)  $a = \frac{5}{3}$   
 $b = 1$   
 $c = \frac{4}{3}$   
 $e = \frac{4}{5}$



16. d)  $a = \frac{1}{2}$   
 $b = \frac{1}{3}$   
 $c = \frac{\sqrt{5}}{6}$   
 $e = \frac{\sqrt{5}}{3}$



17. a)  $\frac{x^2}{25} + \frac{y^2}{21} = 1$   
 c)  $\frac{x^2}{25} + \frac{y^2}{225} = 1$

b)  $\frac{x^2}{36} + \frac{y^2}{27} = 1$   
 d)  $\frac{x^2}{3} + y^2 = 1$

18.  $\frac{x^2}{25} + \frac{y^2}{9} = 1$

19.  $\frac{x^2}{3} + \frac{y^2}{4} = 1$

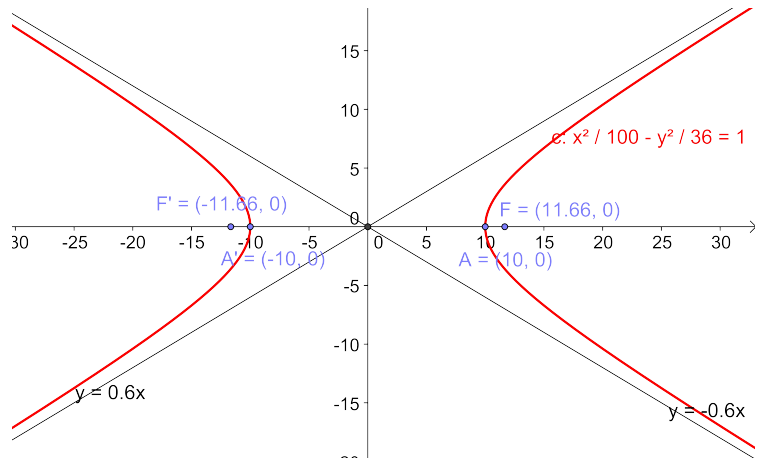
20.  $\frac{x^2}{18} + \frac{y^2}{2} = 1$



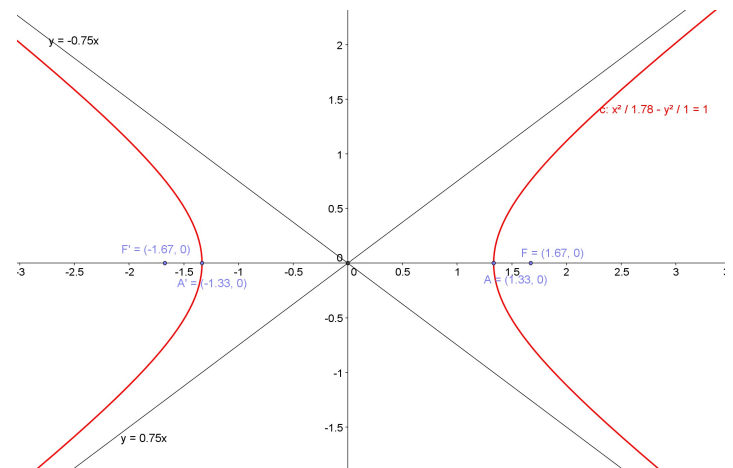
# Soluciones Tema 9

# Lugares geométricos. Cónicas

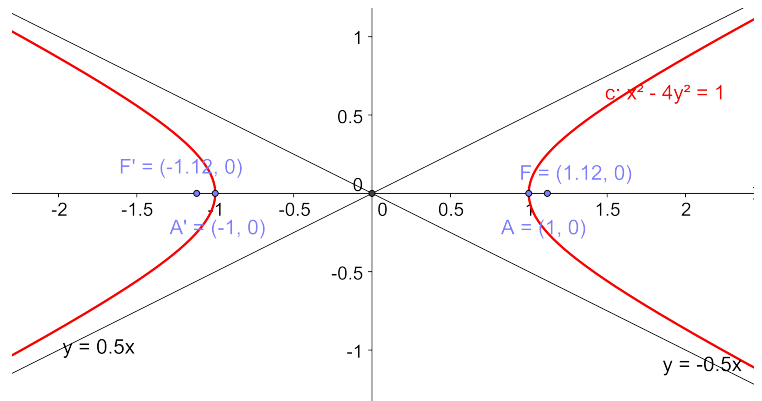
Pág. 236 21. a)  $a = 10$   
 $b = 6$   
 $c = \sqrt{136}$   
 $e = \frac{\sqrt{34}}{5}$   
 $F(2\sqrt{34}, 0) F'(-2\sqrt{34}, 0)$



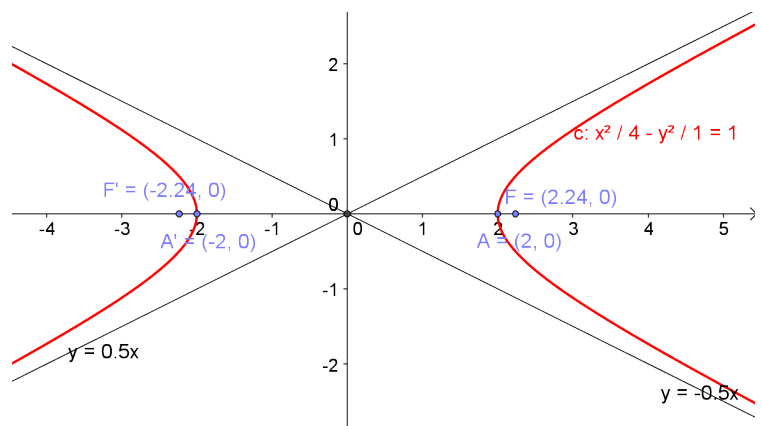
21. b)  $a = \frac{4}{3}$   
 $b = 1$   
 $c = \frac{5}{3}$   
 $e = \frac{5}{4}$   
 $F(\frac{5}{3}, 0) F'(-\frac{5}{3}, 0)$



21. c)  $a = 1$   
 $b = \frac{1}{2}$   
 $c = \frac{\sqrt{5}}{2}$   
 $e = \frac{\sqrt{5}}{2}$   
 $F(\frac{\sqrt{5}}{2}, 0) F'(-\frac{\sqrt{5}}{2}, 0)$



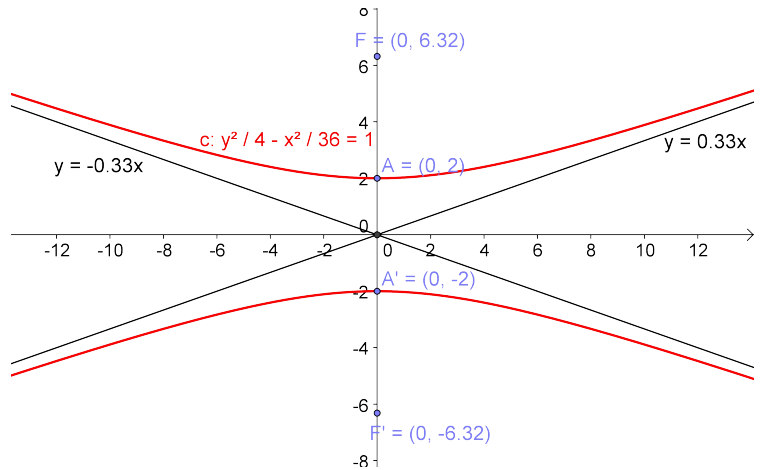
21. d)  $a = 2$   
 $b = 1$   
 $c = \sqrt{5}$   
 $e = \frac{\sqrt{5}}{2}$   
 $F(\sqrt{5}, 0) F'(-\sqrt{5}, 0)$



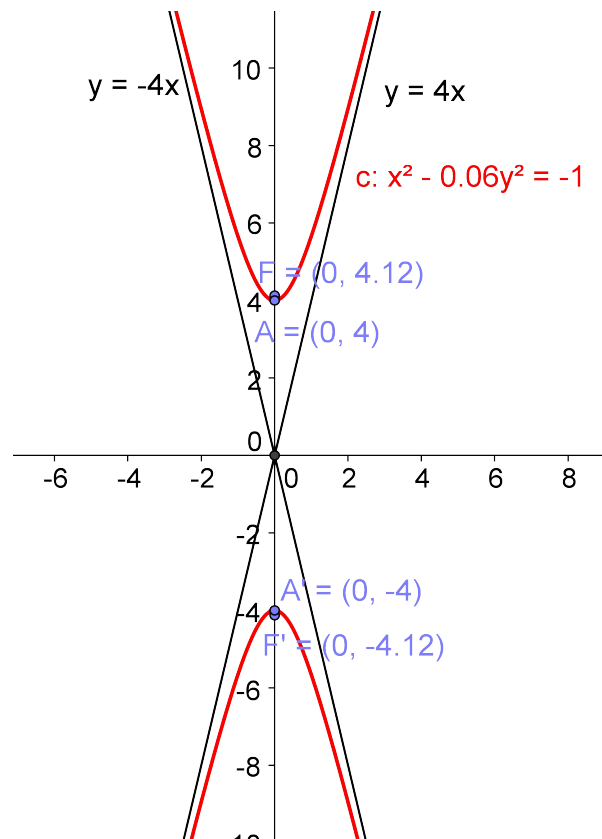
## Soluciones Tema 9

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Pág. 236 21. e)  $a = 2$   
 $b = 6$   
 $c = 2\sqrt{10}$   
 $e = \sqrt{10}$   
 $F(0, 2\sqrt{10}) F'(0, -2\sqrt{10})$



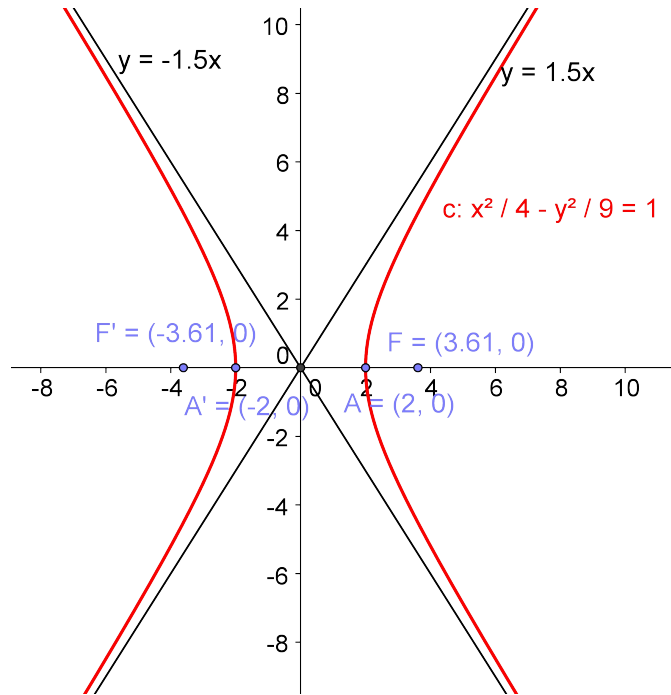
21. f)  $a = 4$   
 $b = 1$   
 $c = \sqrt{17}$   
 $e = \frac{\sqrt{17}}{4}$   
 $F(0, \sqrt{17}) F'(0, -\sqrt{17})$



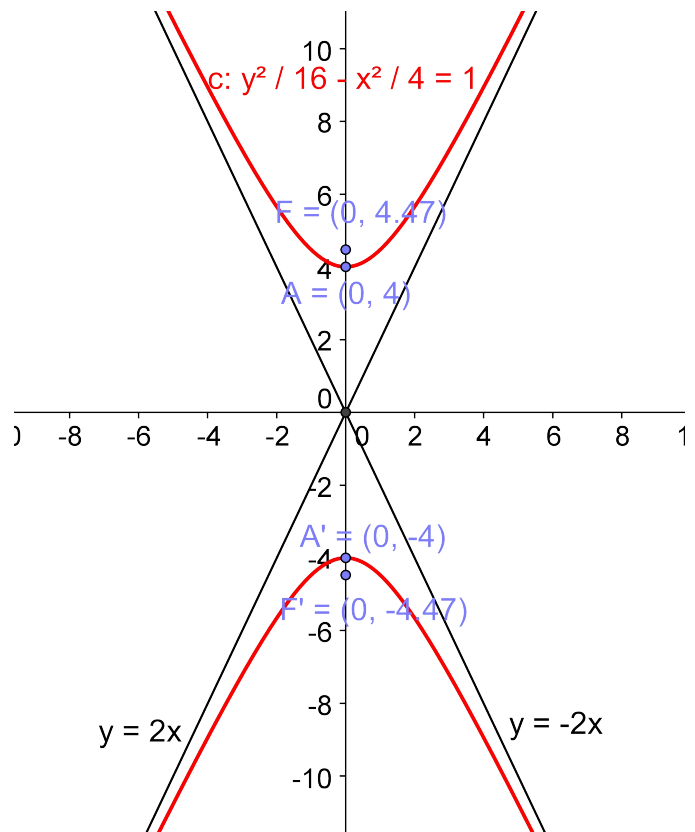
## Soluciones Tema 9

## Lugares geométricos. Cónicas

Pág. 236 21. g)  $a = 2$   
 $b = 3$   
 $c = \sqrt{13}$   
 $e = \frac{\sqrt{13}}{2}$   
 $F(\sqrt{13}, 0) F'(-\sqrt{13}, 0)$



21. h)  $a = 4$   
 $b = 2$   
 $c = 2\sqrt{5}$   
 $e = \frac{\sqrt{5}}{2}$   
 $F(0, 2\sqrt{5}) F'(0, -2\sqrt{5})$



22. a)  $\frac{x^2}{4} - \frac{y^2}{12} = 1$

b)  $\frac{x^2}{4} - \frac{y^2}{25} = 1$

c)  $\frac{x^2}{35} - \frac{y^2}{35} = 1$

c)  $x^2 - \frac{y^2}{8} = 1$

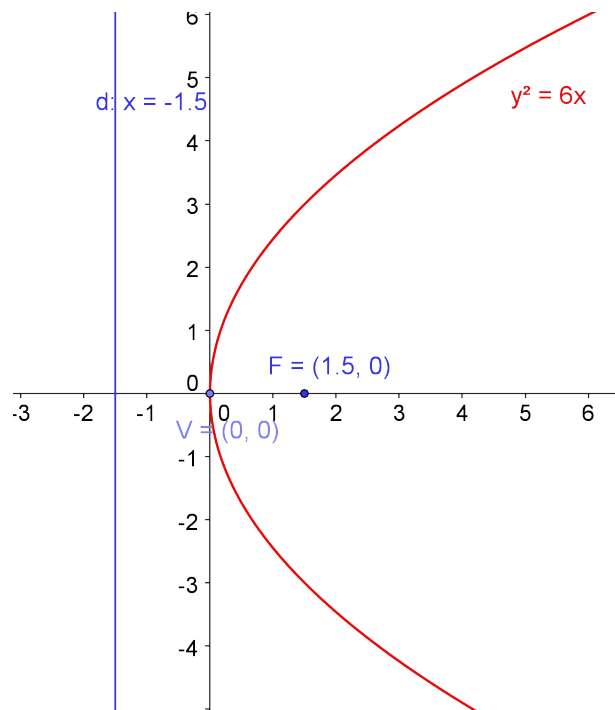




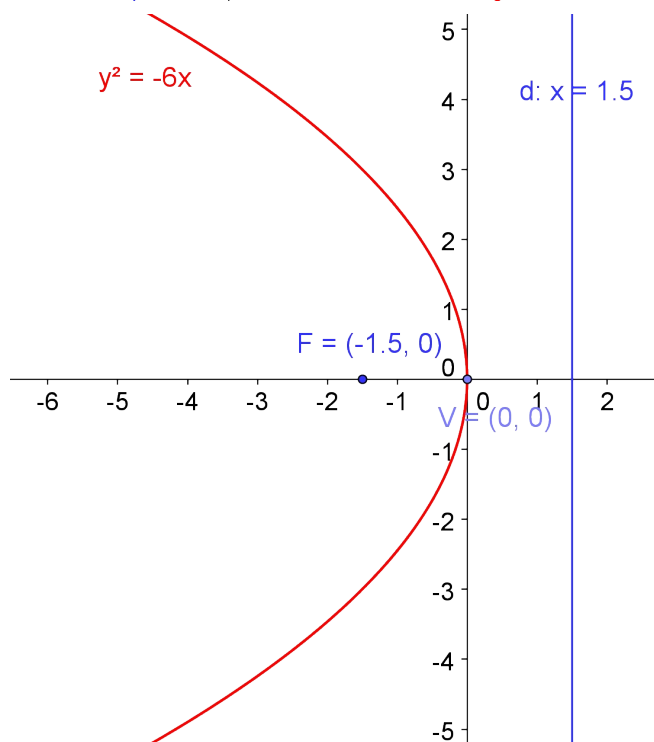
Pág. 236 23.  $\frac{x^2}{9} - \frac{y^2}{7} = 1$

24.  $\frac{x^2}{4} - \frac{y^2}{5} = 1$

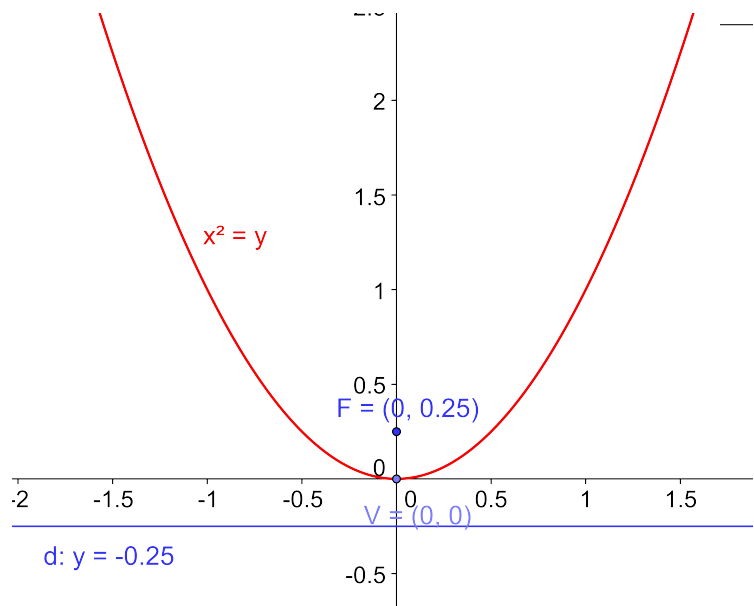
25. a)



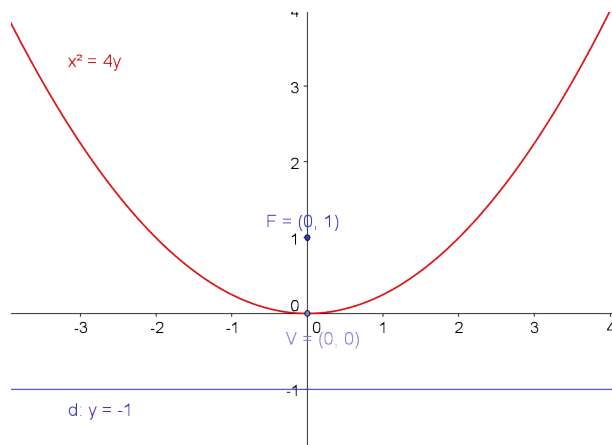
25. b)



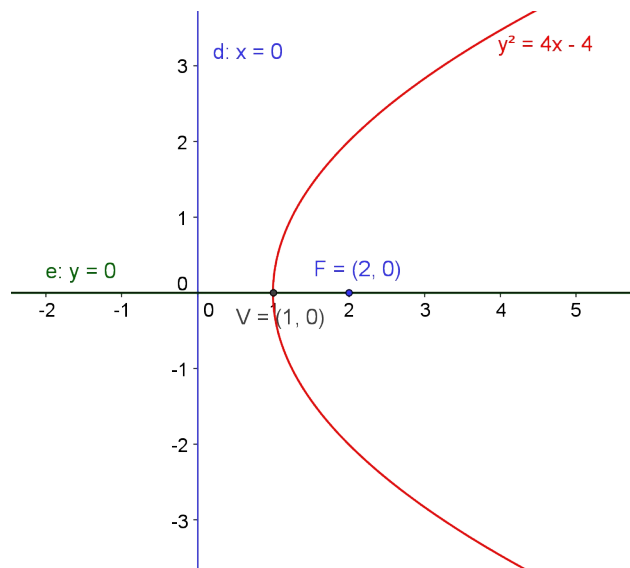
Pág. 236 25. c)



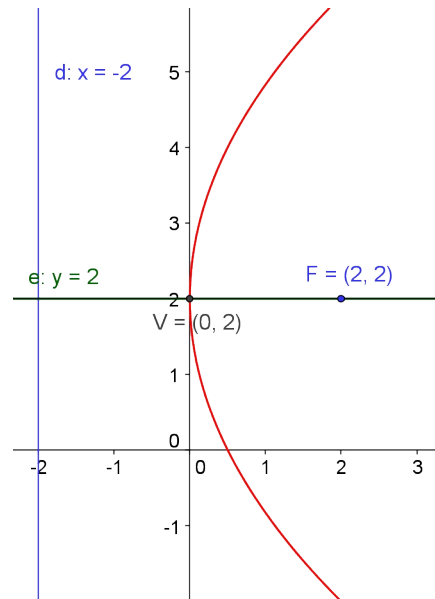
25. d)



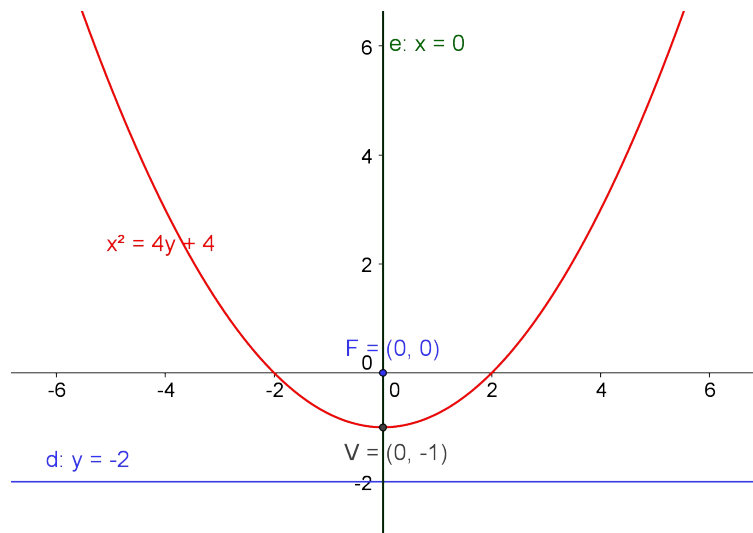
25. e)



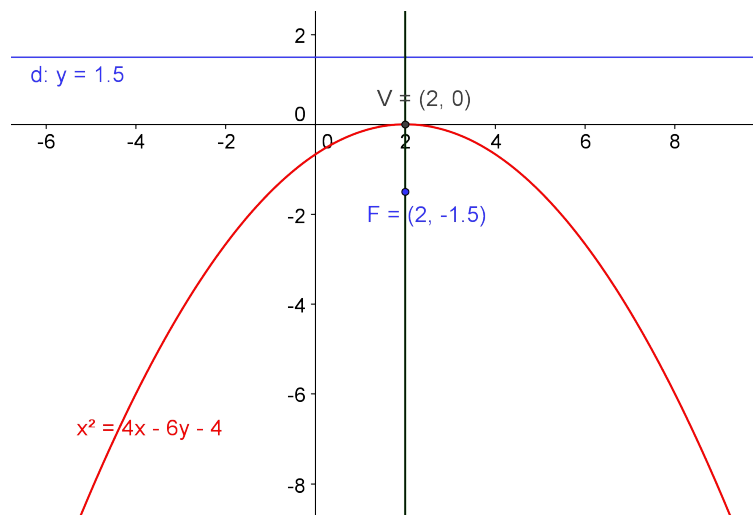
Pág. 236 25. f)



25. g)



25. h)



26. a)  $y^2 = 20x$     b)  $x^2 = -12y$     c)  $y^2 = \frac{9}{2}x$ ;  $x^2 = \frac{4}{3}y$

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

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



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29. a) Elipse

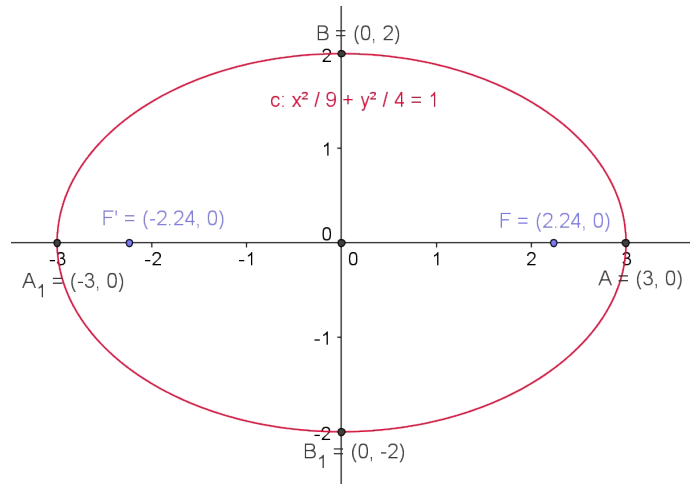
$$a = 3$$

$$b = 2$$

$$c = \sqrt{5}$$

$$e = \frac{\sqrt{5}}{3}$$

$$F(\sqrt{5}, 0) \quad F'(-\sqrt{5}, 0)$$



29. b) Hipérbola

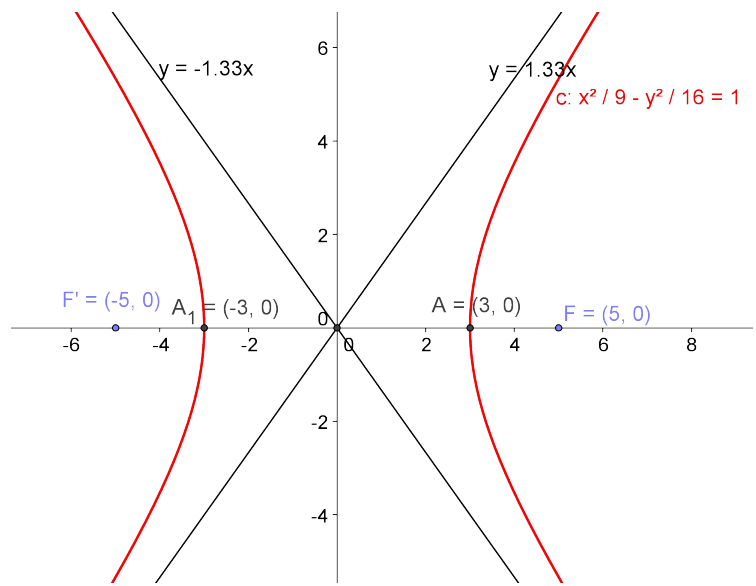
$$a = 3$$

$$b = 4$$

$$c = 5$$

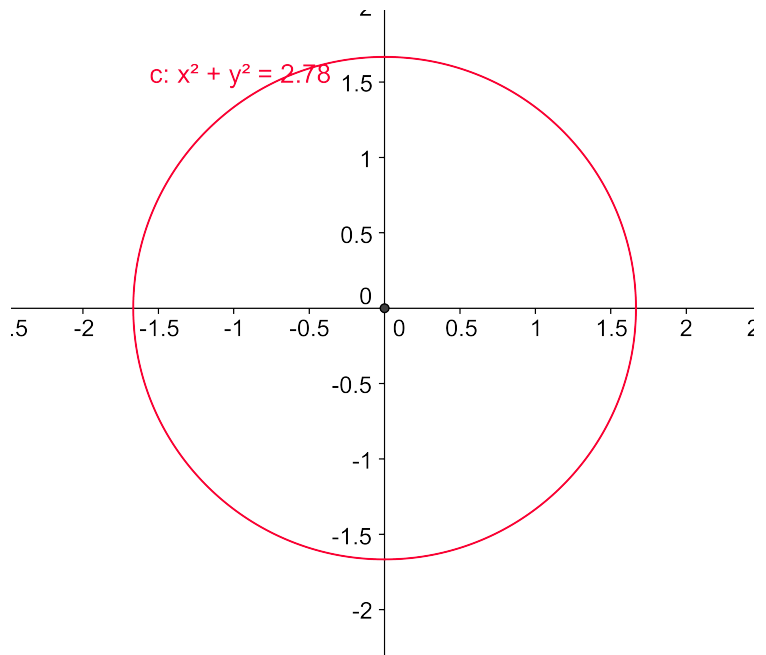
$$e = \frac{5}{3}$$

$$F(5, 0) \quad F'(-5, 0)$$



29. c) Circunferência

$$C(0, 0) \quad r = \frac{5}{3}$$



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Pág. 237 29. d) Hipérbola

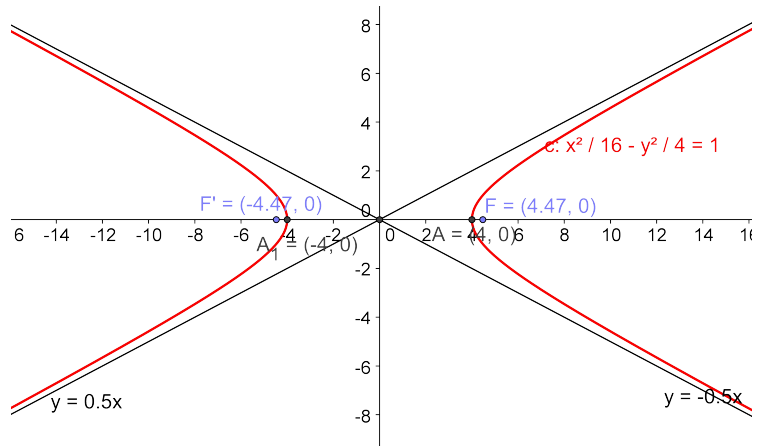
$$a = 4$$

$$b = 2$$

$$c = 2\sqrt{5}$$

$$e = \frac{\sqrt{5}}{2}$$

$$F(2\sqrt{5}, 0) \quad F'(-2\sqrt{5}, 0)$$

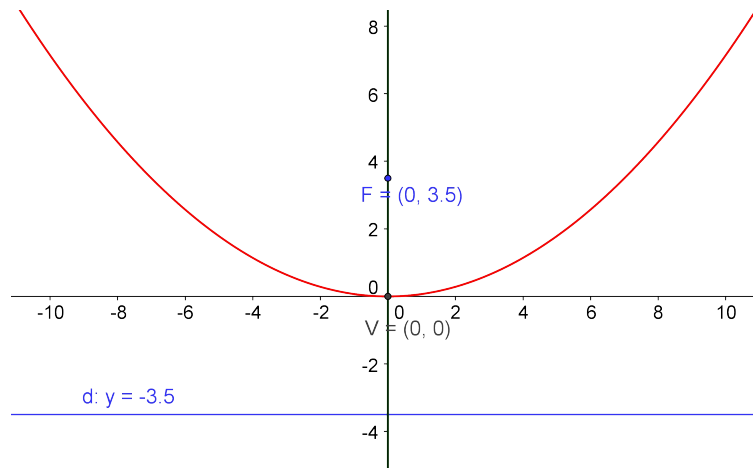


29. e) Parábola

$$p = 7$$

$$F\left(\frac{7}{2}, 0\right)$$

$$x = -\frac{7}{2}$$



29. f) Elipse

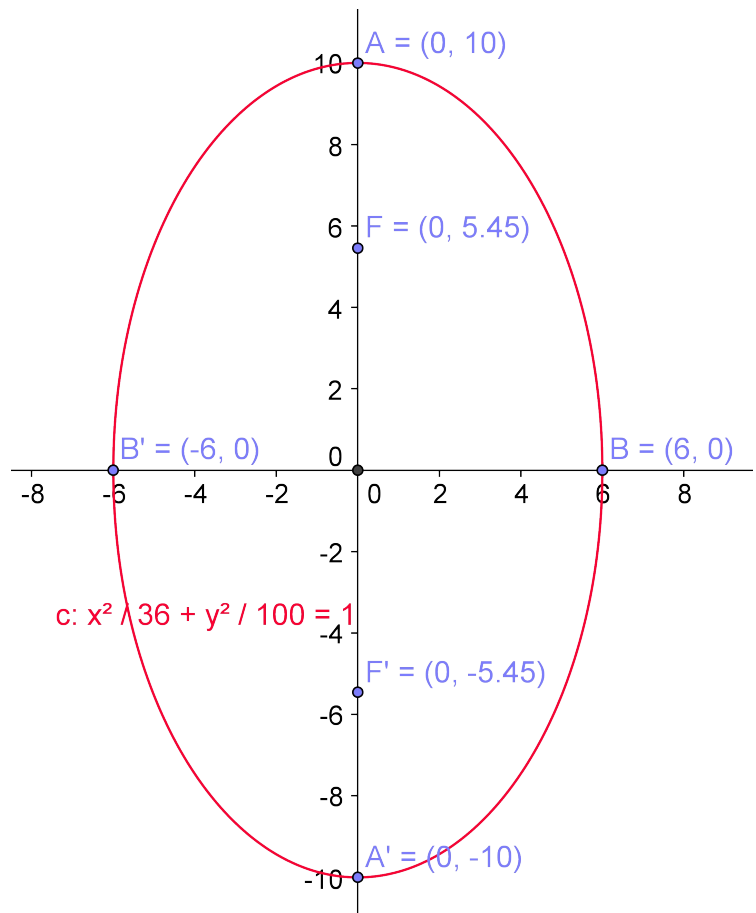
$$a = 6$$

$$b = \frac{5}{2}$$

$$c = \frac{\sqrt{119}}{2}$$

$$e = \frac{\sqrt{119}}{12}$$

$$F\left(\frac{\sqrt{119}}{2}, 0\right) \quad F'\left(-\frac{\sqrt{119}}{2}, 0\right)$$



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30.  $\frac{x^2}{100} + \frac{y^2}{25} = 1$

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

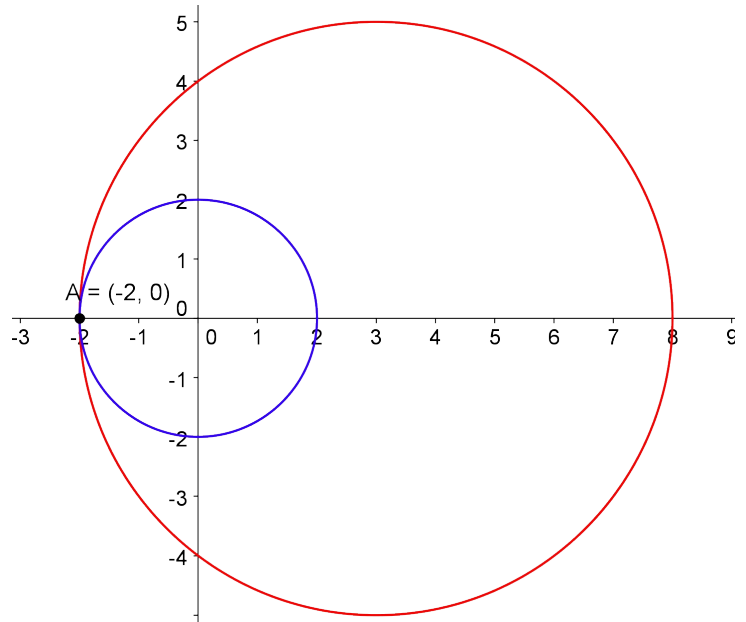
32.  $\frac{2x^2}{25} - \frac{2y^2}{25} = 1$

33.  $\frac{17x^2}{50} - \frac{17y^2}{18} = 1$

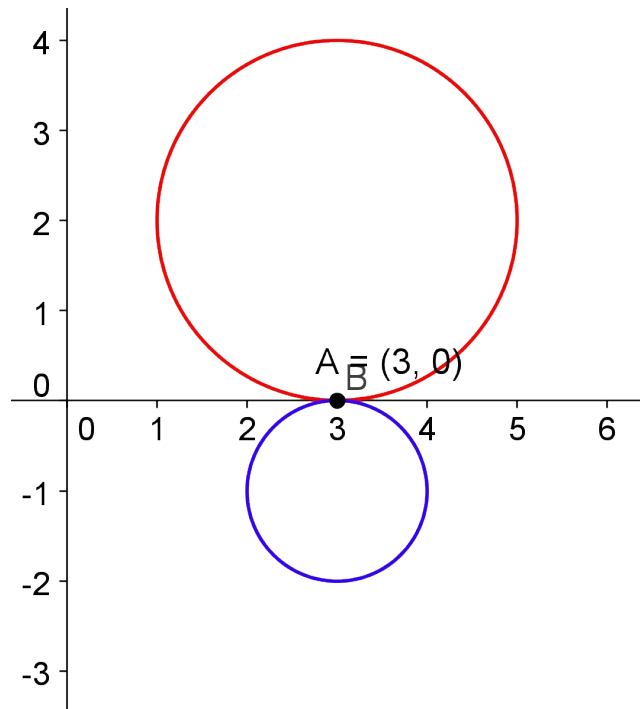
34. a)  $x^2 = 4(y+1)$     b)  $y^2 = 6(x - \frac{1}{2})$     c)  $(x-1)^2 = 2y-1$

35. Tangente

36. a)  $(-2, 0)$   
Tangentes interiores



36. b)  $(3, 0)$   
Tangentes exteriores



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