

Lista de Exercícios de GA

Capítulo 1: Curvas no plano: equações algébricas

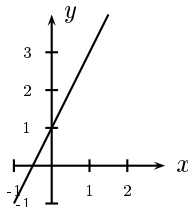
Retas.

Exemplo 1: esboce a reta dada pela equação $y = 1 + 2x$.

Solução:

$$x = 0 : y = 1 + 2 \cdot 0 = 1 + 0 = 1$$

$$x = 1 : y = 1 + 2 \cdot 1 = 1 + 2 = 3$$



E1) Esboce as retas dadas pelas seguintes equações:

- a) $y = x$, b) $y = 1 + x$, c) $y = 2x$, d) $y = 0,5x$, e) $y = -x$, f) $y = 3 - x$, g) $y = -2 + 3x$.

Parábolas.

Exemplo 2: esboce a parábola dada pela equação $y = -1 + x^2$.

Solução:

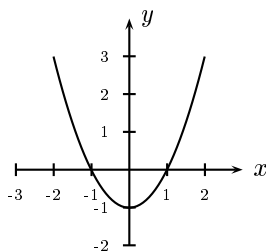
$$x = -2 : y = -1 + (-2)^2 = -1 + 4 = 3$$

$$x = -1 : y = -1 + (-1)^2 = -1 + 1 = 0$$

$$x = 0 : y = -1 + 0^2 = -1 + 0 = -1$$

$$x = 1 : y = -1 + 1^2 = -1 + 1 = 0$$

$$x = 2 : y = -1 + 2^2 = -1 + 4 = 3$$



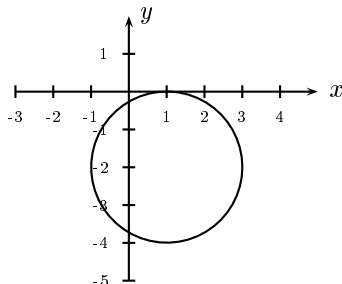
E2) Esboce as parábolas dadas pelas seguintes equações:

- a) $y = x^2$, b) $y = 1 + x^2$, c) $y = 2x^2$, d) $y = 0,5x^2$, e) $y = -x^2$, f) $y = -2 + 2x^2$, g) $y = 1 + (x - 2)^2$.

Circunferências.

Exemplo 3: esboce a circunferência dada pela equação $(x - 1)^2 + (y + 2)^2 = 4$.

Solução: esta é uma circunferência de raio 2 centrada em $x = 1$ e $y = -2$.



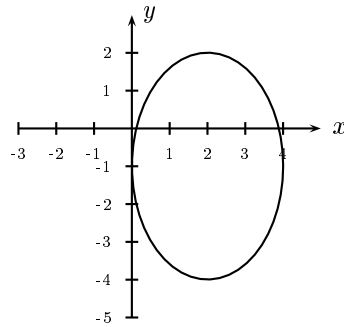
E3) Esboce as circunferências dadas pelas seguintes equações:

- a) $x^2 + y^2 = 4$, b) $x^2 + y^2 = 9$, c) $x^2 + y^2 = 1$, d) $(x - 1)^2 + (y - 1)^2 = 4$, e) $(x - 3)^2 + (y - 2)^2 = 1$,
f) $(x + 1)^2 + (y - 2)^2 = 4$.

Elipses.

Exemplo 4: esboce a elipse dada pela equação $\frac{(x-2)^2}{4} + \frac{(y+1)^2}{9} = 1$.

Solução: esta é uma elipse de aresta 2 em x e aresta 3 em y , centrada em $x = 2$ e $y = -1$.



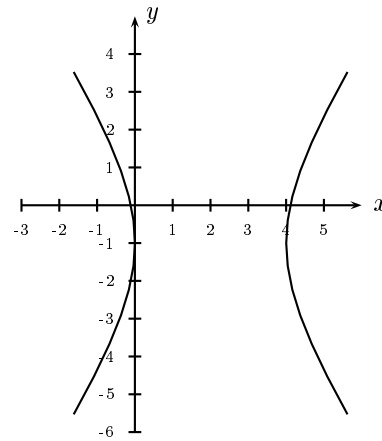
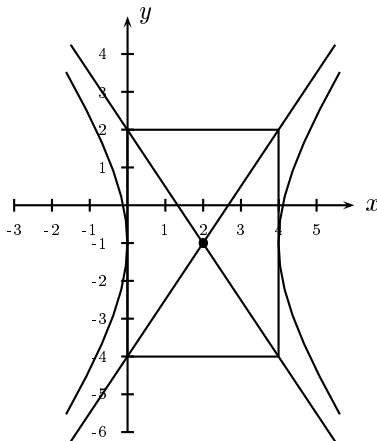
E4) Esboce as elipses dadas pelas seguintes equações:

- a) $\frac{x^2}{9} + \frac{y^2}{4} = 1$, b) $\frac{x^2}{1} + \frac{y^2}{4} = 1$, c) $\frac{(x-1)^2}{9} + \frac{(y-2)^2}{1} = 1$, d) $\frac{(x+2)^2}{4} + \frac{(y+1)^2}{9} = 1$, e) $\frac{x^2}{9} + \frac{y^2}{9} = 1$.

Hipérboles.

Exemplo 5: esboce a hipérbole dada pela equação $\frac{(x-2)^2}{4} - \frac{(y+1)^2}{9} = 1$.

Solução: esta é uma hipérbole cujas assíntotas seguem as diagonais do retângulo de base 2 e altura 3, centrado em $x = 2$ e $y = -1$.

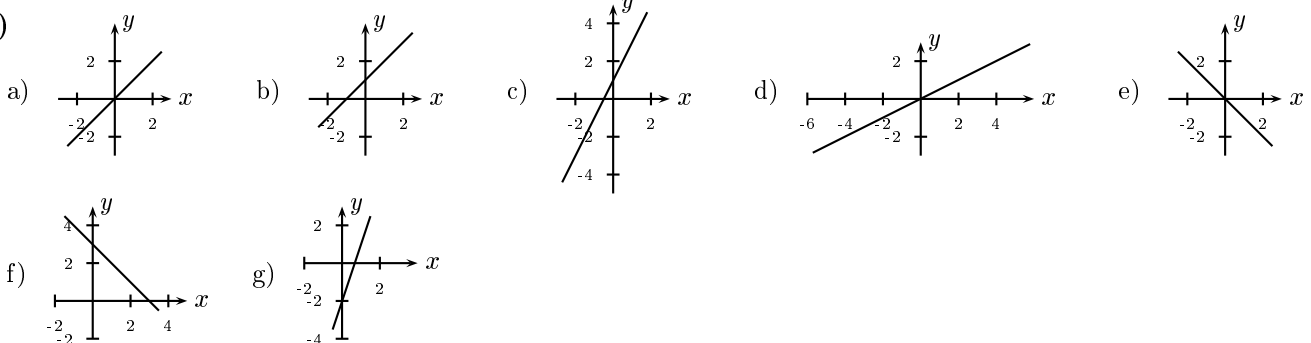


E5) Esboce as hipérboles dadas pelas seguintes equações:

- a) $\frac{x^2}{9} - \frac{y^2}{4} = 1$, b) $\frac{x^2}{1} - \frac{y^2}{4} = 1$, c) $\frac{y^2}{9} - \frac{x^2}{4} = 1$, d) $\frac{x^2}{9} - \frac{y^2}{9} = 1$, e) $\frac{(x+2)^2}{9} - \frac{(y-1)^2}{4} = 1$,
 f) $\frac{(y-1)^2}{9} - \frac{(x+1)^2}{4} = 1$.

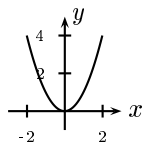
Respostas

E1)

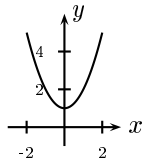


E2)

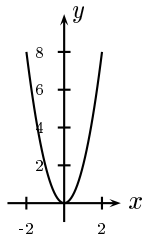
a)



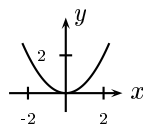
b)



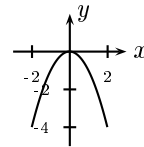
c)



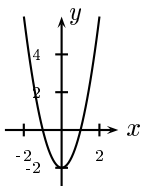
d)



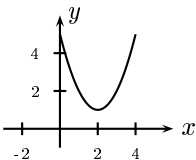
e)



f)

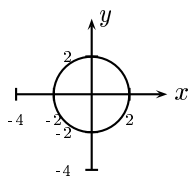


g)

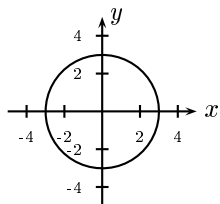


E3)

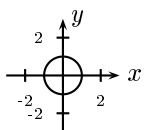
a)



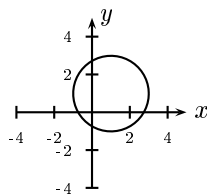
b)



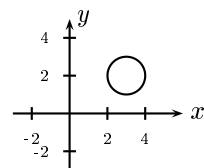
c)



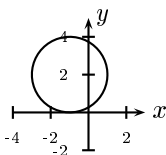
d)



e)

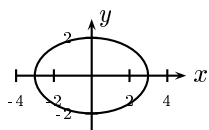


f)

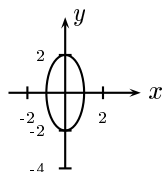


E4)

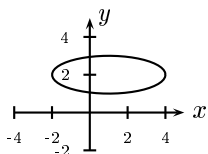
a)



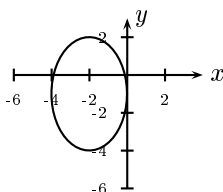
b)



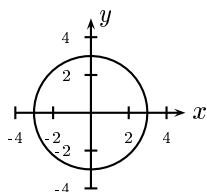
c)



d)

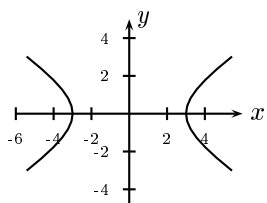


e)

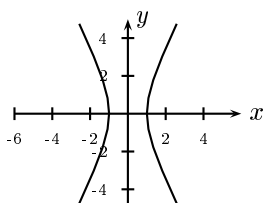


E5)

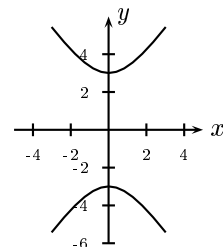
a)



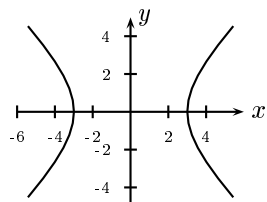
b)



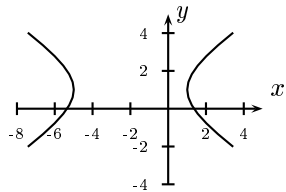
c)



d)



e)



f)

