

MTM3111 e MTM5512 - Geometria Analítica

Gabarito da Lista de exercícios 5.2

Elipse

Última atualização: 20 de abril de 2021

1.

(a) $\frac{x^2}{5^2} + \frac{y^2}{3^2} = 1.$

(b) $\frac{x^2}{2^2} + \frac{y^2}{3^2} = 1.$

(c) $\frac{x^2}{3^2} + \frac{y^2}{(\sqrt{5})^2} = 1.$

(d) $\frac{(x-2)^2}{4^2} + \frac{(y-4)^2}{(\sqrt{7})^2} = 1.$

(e) $\frac{(x+3)^2}{3^2} + \frac{y^2}{(\sqrt{5})^2} = 1.$

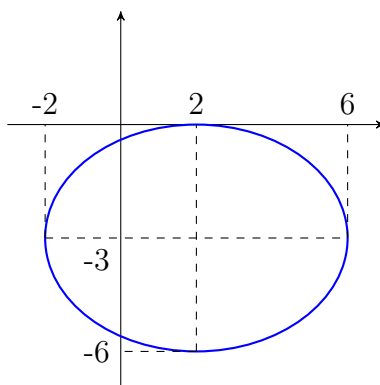
(f) $\frac{(x+3)^2}{3^2} + \frac{(y-4)^2}{4^2} = 1.$

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

2.

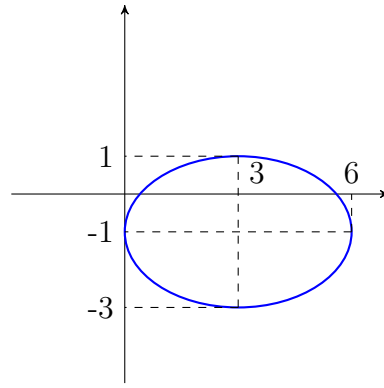
(a) Equação: $\frac{(x-2)^2}{4^2} + \frac{(y+3)^2}{3^2} = 1.$

Elementos: $a = 4$, $b = 3$, $c = \sqrt{7}$, $C = (2, -3)$, $A_1 = (-2, -3)$, $A_2 = (6, -3)$, $B_1 = (2, -6)$, $B_2 = (2, 0)$, $F_1 = (2 - \sqrt{7}, -3)$, $F_2 = (2 + \sqrt{7}, -3)$, $e = \sqrt{7}/4$.



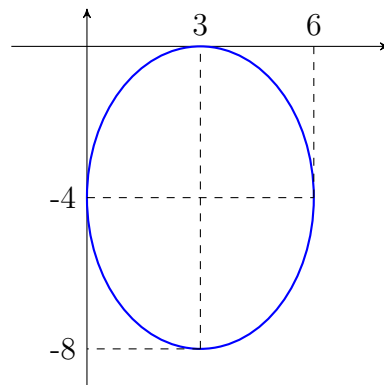
(b) Equação: $\frac{(x-3)^2}{3^2} + \frac{(y+1)^2}{2^2} = 1.$

Elementos: $a = 3$, $b = 2$, $c = \sqrt{5}$, $C = (3, -1)$, $A_1 = (6, -1)$, $A_2 = (0, -1)$, $B_1 = (3, -3)$, $B_2 = (3, 1)$, $F_1 = (3 - \sqrt{5}, -1)$, $F_2 = (3 + \sqrt{5}, -1)$, $e = \sqrt{5}/3$.



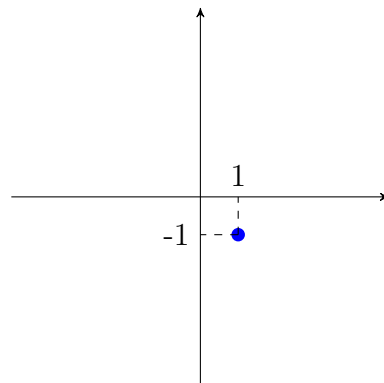
(c) Equação: $\frac{(x-3)^2}{3^2} + \frac{(y+4)^2}{4^2} = 1$.

Elementos: $a = 4$, $b = 3$, $c = \sqrt{7}$, $C = (3, -4)$, $A_1 = (3, -8)$, $A_2 = (3, 0)$, $B_1 = (0, -4)$, $B_2 = (6, -4)$, $F_1 = (3, -4 - \sqrt{7})$, $F_2 = (3, -4 + \sqrt{7})$, $e = \sqrt{7}/4$.



(d) Equação: $\frac{(x-1)^2}{3^2} + \frac{(y+1)^2}{2^2} = 0$.

Elementos: o gráfico é um único ponto.



3. $m = 9$, $n = -8$, $p = -36$ e $q = 4$.

4. $m = 0$.