

Cálculo 3 - Lista 2

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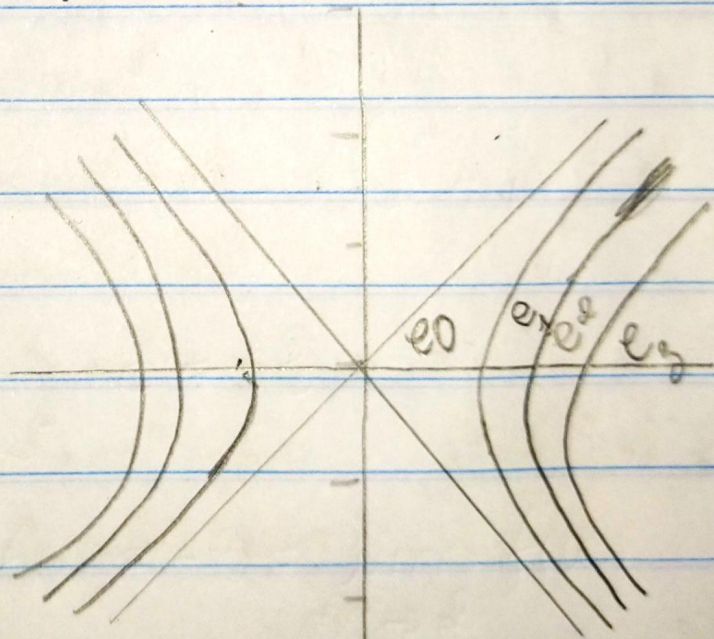
a) $z = x^2 - y^2$; $k = 0, 1, 2, 3$.

$$C_0 \rightarrow x^2 - y^2 = 0$$

$$C_1 \rightarrow x^2 - y^2 = 1$$

$$C_2 \rightarrow x^2 - y^2 = 2$$

$$C_3 \rightarrow x^2 - y^2 = 3$$



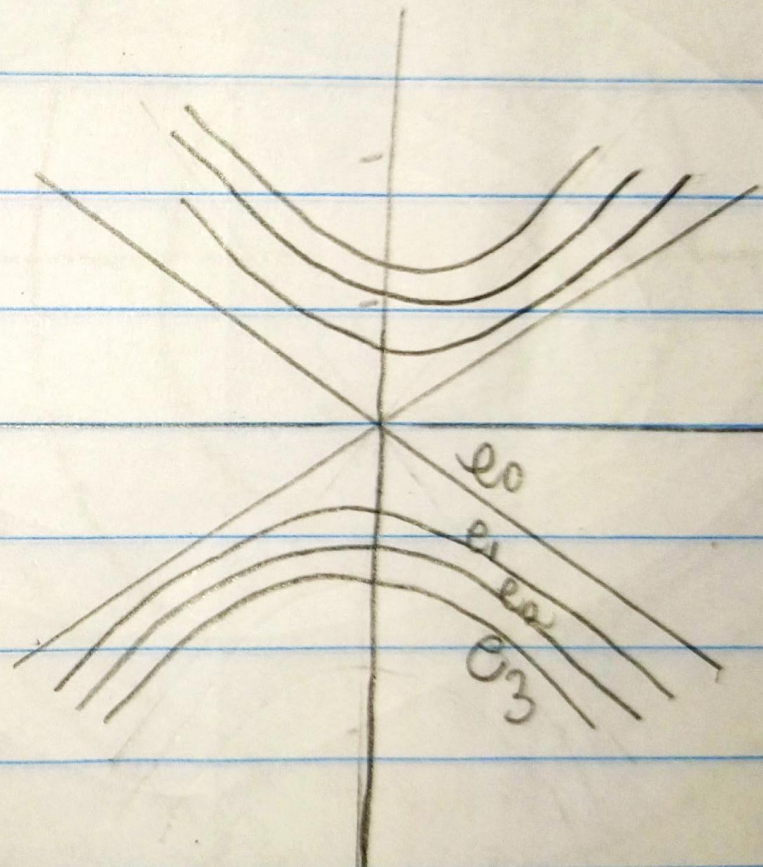
$$b) z = y^2 - x^2; k = 0, 1, 2, 3.$$

$$C_0 \rightarrow y^2 - x^2 = 0$$

$$C_1 \rightarrow y^2 - x^2 = 1$$

$$C_2 \rightarrow y^2 - x^2 = 2$$

$$C_3 \rightarrow y^2 - x^2 = 3$$



c) $z = 2 - (x^2 + y^2); K = -3, -2, -1, 0, 1, 2.$

$C_{-3} \rightarrow 2 - (x^2 + y^2) = -3 \rightarrow x^2 + y^2 = 5$

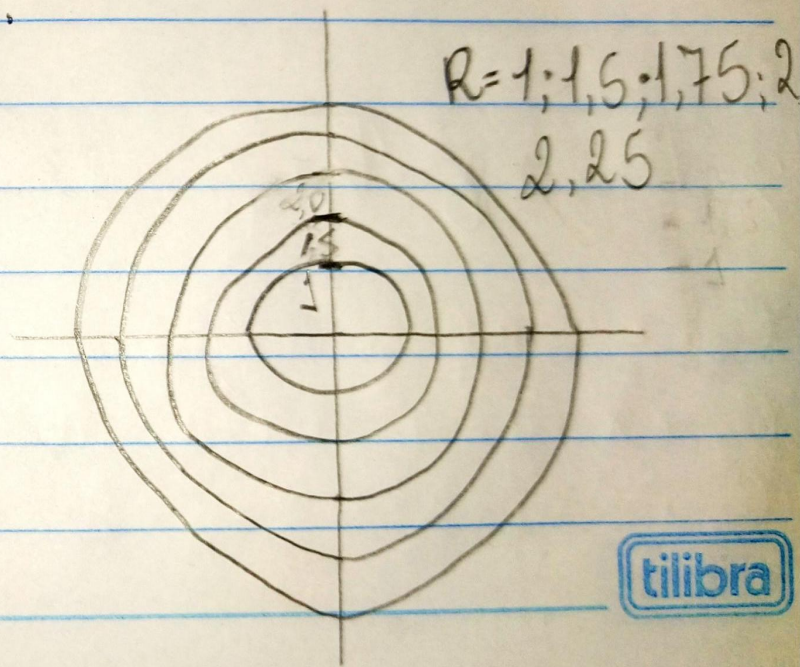
$C_{-2} \rightarrow 2 - (x^2 + y^2) = -2 \rightarrow x^2 + y^2 = 4$

$C_{-1} \rightarrow 2 - (x^2 + y^2) = -1 \rightarrow x^2 + y^2 = 3$

$C_0 \rightarrow 2 - (x^2 + y^2) = 0 \rightarrow x^2 + y^2 = 2$

$C_1 \rightarrow 2 - (x^2 + y^2) = 1 \rightarrow x^2 + y^2 = 1$

$C_2 \rightarrow 2 - (x^2 + y^2) = 2 \rightarrow x^2 + y^2 = 0$



$$d) L = \frac{1}{2} \sqrt{m^2 + m^2}; k = 0, 1, 2, 3, 4, 5.$$

$$L^2 = \left(\frac{1}{2} \sqrt{m^2 + m^2} \right)^2 \rightarrow L^2 = \frac{1}{4} (m^2 + m^2) \rightarrow m^2 + m^2 = 4 \cdot (L)^2$$

$$C_0 \rightarrow m^2 + m^2 = 4 \cdot (0)^2 \rightarrow m^2 + m^2 = 0$$

$$C_1 \rightarrow m^2 + m^2 = 4 \cdot (1)^2 \rightarrow m^2 + m^2 = 4$$

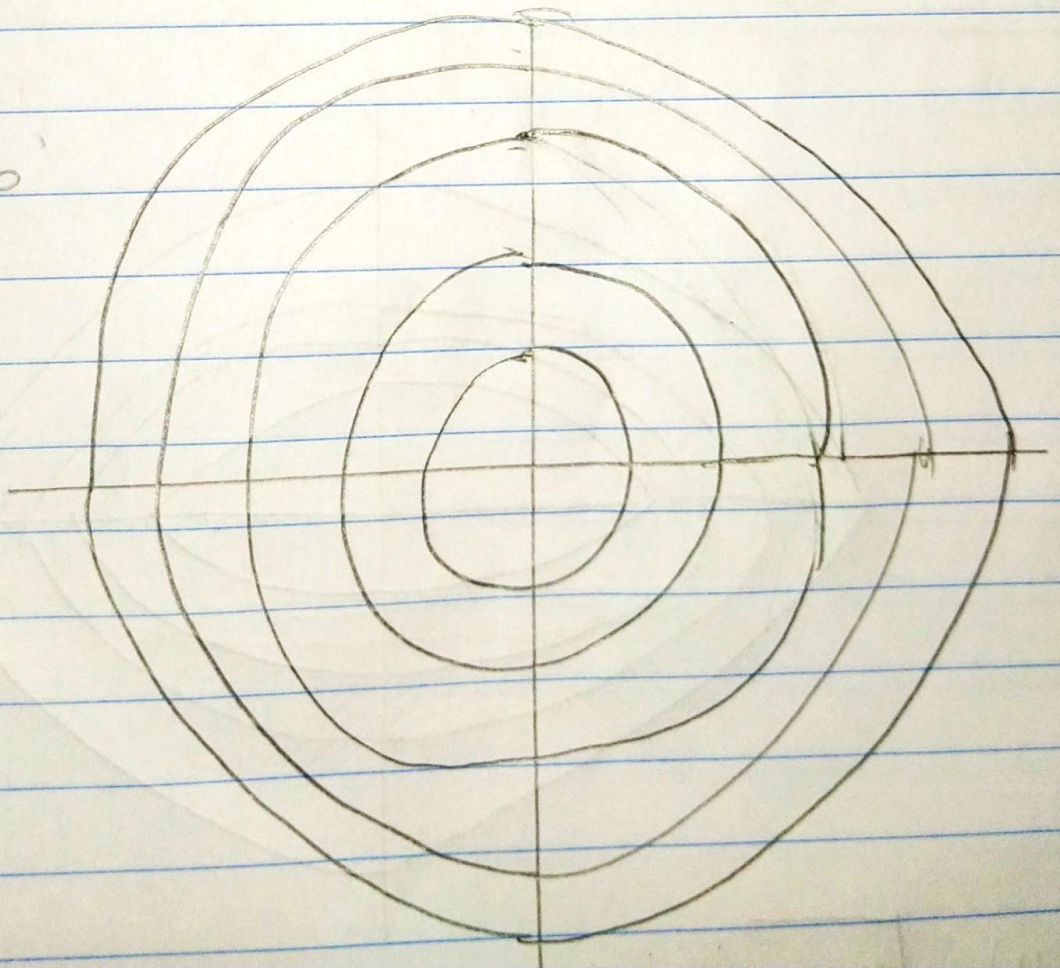
$$C_2 \rightarrow m^2 + m^2 = 4 \cdot (2)^2 \rightarrow m^2 + m^2 = 16$$

$$C_3 \rightarrow m^2 + m^2 = 4 \cdot (3)^2 \rightarrow m^2 + m^2 = 36$$

$$C_4 \rightarrow m^2 + m^2 = 4 \cdot (4)^2 \rightarrow m^2 + m^2 = 64 \quad R = \{2, 4, 6, 8, 10\}$$

$$C_5 \rightarrow m^2 + m^2 = 4 \cdot (5)^2 \rightarrow m^2 + m^2 = 100$$

Obs: São círculos
perfetos



$$c) f(x, y) = 2x^3 + 4y^2; K = 2, 3, 4, 8$$

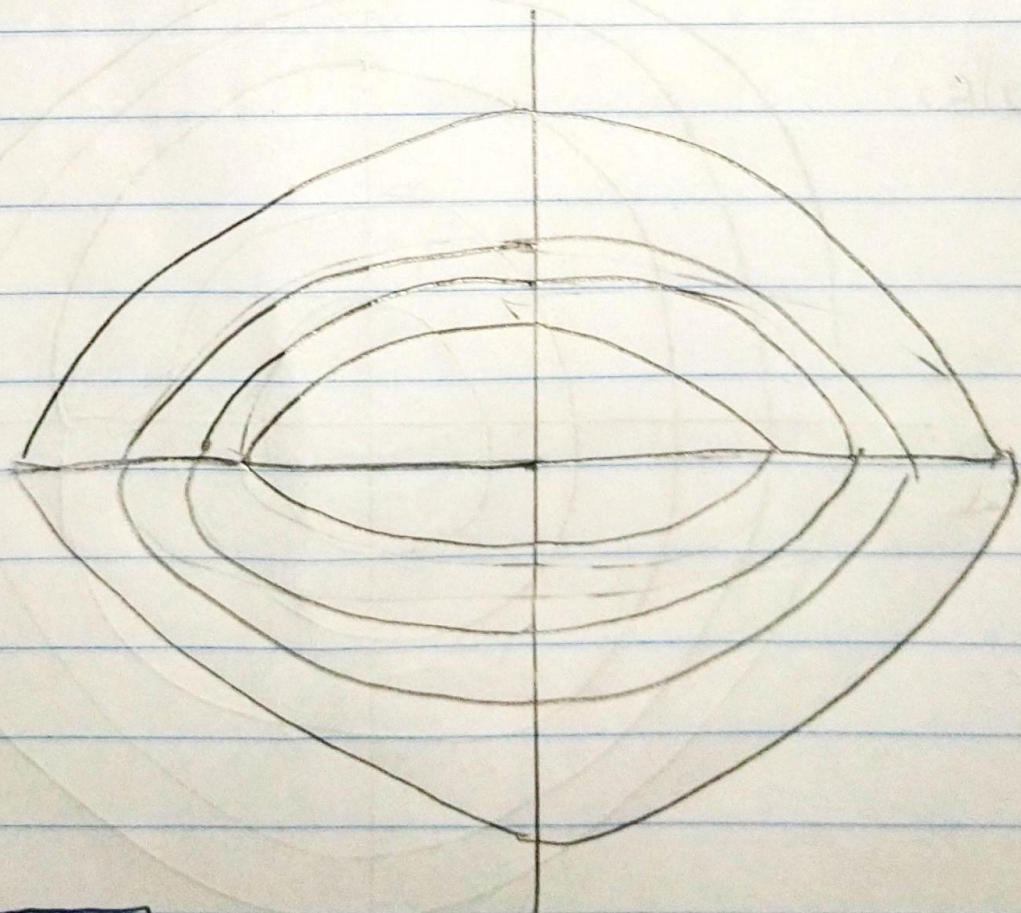
$$\frac{2x^3 + 4y^2}{2} = \frac{K}{2} = x^2 + 2y^2 = \frac{K}{2}$$

$$C_2 \rightarrow x^2 + 2y^2 = \frac{2}{2} \rightarrow x^2 + 2y^2 = 1$$

$$C_3 \rightarrow x^2 + 2y^2 = \frac{3}{2} \rightarrow x^2 + 2y^2 = 1,5$$

$$C_4 \rightarrow x^2 + 2y^2 = \frac{4}{2} \rightarrow x^2 + 2y^2 = 2$$

$$C_8 \rightarrow x^2 + 2y^2 = \frac{8}{2} \rightarrow x^2 + 2y^2 = 4$$



$$f) F(x, y) = \sqrt{x+y} ; k = 5, 4, 3, 2$$

$$F(x, y) = z$$

$$z = \sqrt{x+y} \Rightarrow z^2 = (\sqrt{x+y})^2 \Rightarrow z^2 = x+y$$

$$C_5 \rightarrow x+y = 5^2 \rightarrow x+y = 25$$

$$C_4 \rightarrow x+y = 4^2 \rightarrow x+y = 16$$

$$C_3 \rightarrow x+y = 3^2 \rightarrow x+y = 9$$

$$C_2 \rightarrow x+y = 2^2 \rightarrow x+y = 4$$

