Tarefa 1 - Prof Sávio

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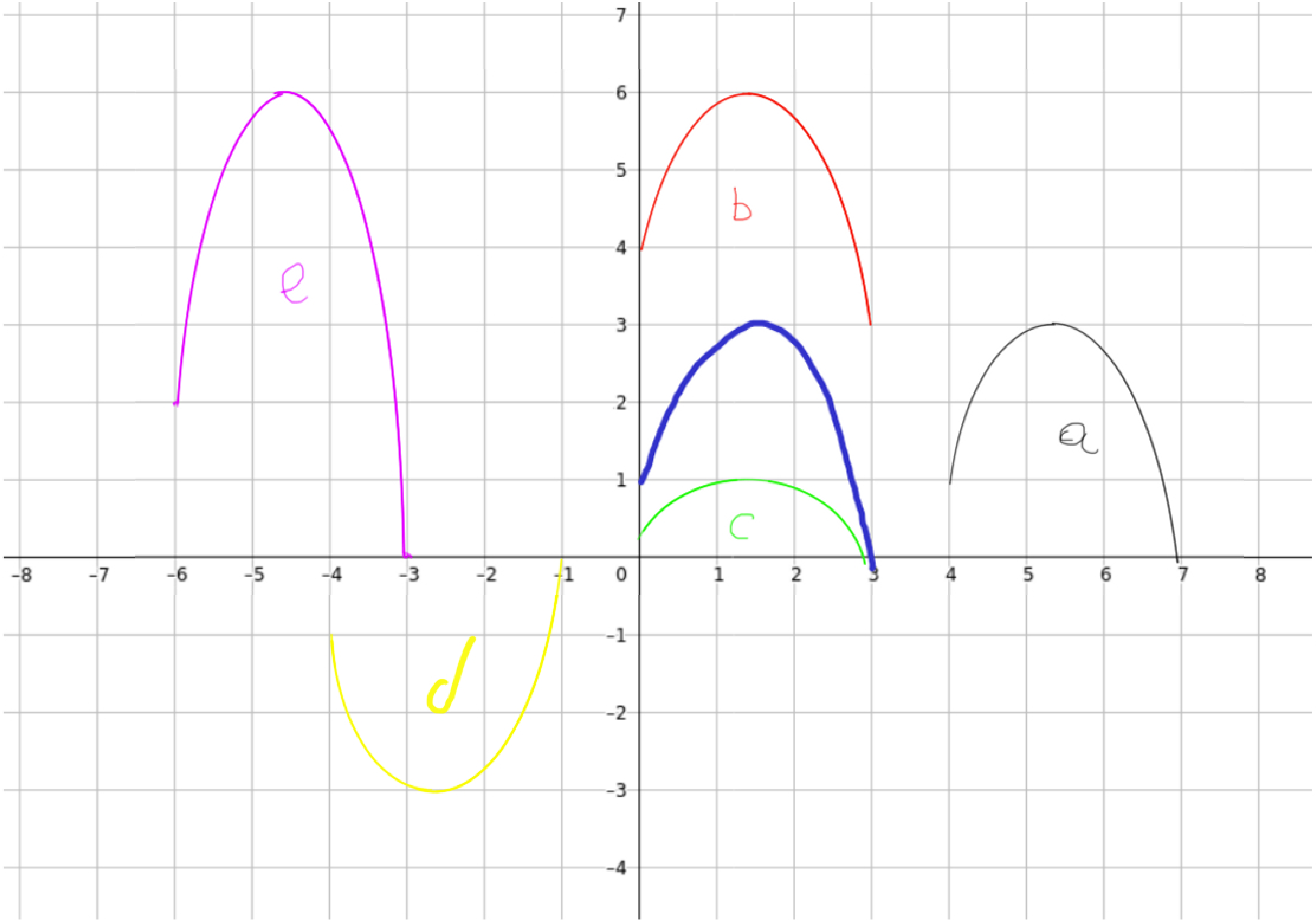
1-



2- a) $h(x) = 4x^2 + 4x + 1 + 6 = (2x+1)^2 + 6 \rightarrow g(x)$

$f(x) = x^2 + 6$

b) $h(x) = 4x + 16 - 17 = 4(x+4) - 17 \rightarrow f(x)$

$g(x) = 4x - 17$

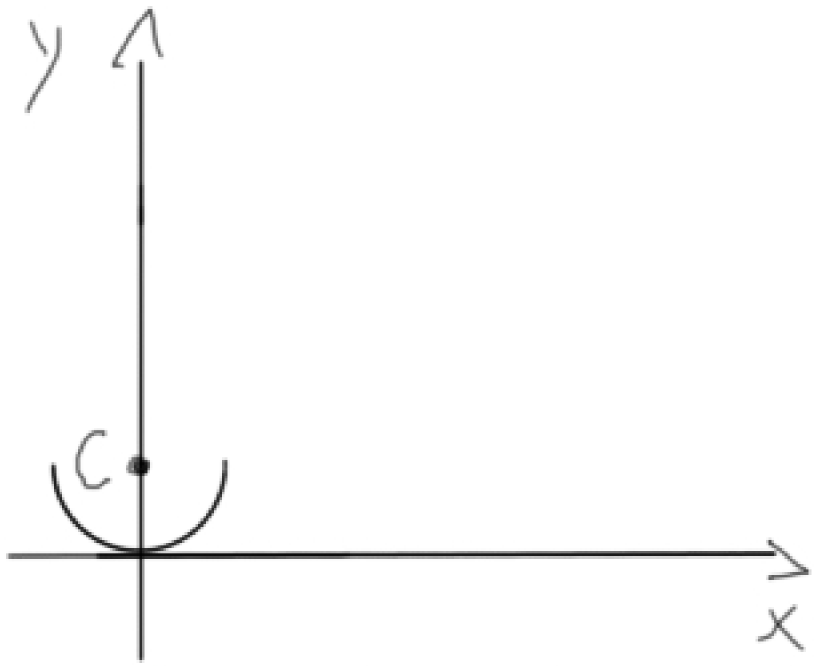
c) $y = \frac{2}{x} - 4 \xrightarrow[\text{a inversa}]{\text{fazendo}} x = \frac{2}{y} - 4 \longrightarrow x + 4 = \frac{2}{y} \rightarrow y = \frac{2}{(x+4)}$

$g(x) = \frac{2}{x+4}$

3-

a) $x^2+(y-2)^2=4$

centro é $C(0;2)$ de raio 2



$$(y-2)^2 = 4-x^2$$

$$y-2=\sqrt{4-x^2}$$

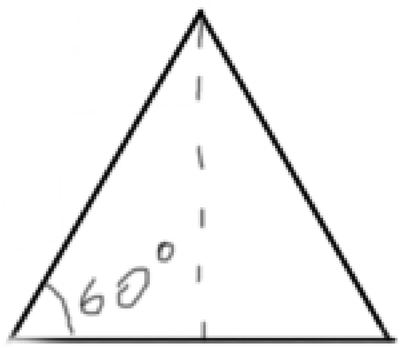
$$y=\pm\sqrt{4-x^2}+2$$

porém, queremos só a metade inferior

$$y=-\sqrt{4-x^2}+2$$

$$\boxed{S=\{x\in\mathbb{R} \mid -2\leqslant x\leqslant 2\}}$$

b)



$$A = \frac{l \cdot \text{sen}60 \cdot l}{2} = \frac{\frac{\sqrt{3}}{2} \cdot l^2}{2} = \frac{l^2\sqrt{3}}{4}$$

$$f(x) = \frac{x^2\sqrt{3}}{4}$$

$$\boxed{S = \{x \in \mathbb{R} \mid x > 0\}}$$

c) primeiro função: $y - y_0 = m \cdot (x - x_0)$

$1 - 2 = m \cdot (-3 - (-4))$

$-1 = m \cdot 1$

$m = -1$

$y - 1 = -1 \cdot (x - (-3))$

$y = -x - 2$

segundo função: (circunferência) $(x^2 - 0) + (y^2 - 0) = 2^2$

$y^2 = 4 - x^2$

$y = + \sqrt{4 - x^2}$

terceiro função: $3 - 0 = m \cdot (3 - 2)$

$m = 3$

$y - 0 = 3 \cdot (x - 2)$

$y = 3x - 6$

$f : [-5, 3] \longrightarrow \mathbb{R}$, é dado por

$$f(x) = \begin{cases} y = -x - 2, \text{ para } -5 \leqslant x \leqslant -2 \\ y = \sqrt{4 - x^2}, \text{ para } -2 \leqslant x \leqslant 2 \\ y = 3x - 6, \text{ para } 2 \leqslant x \leqslant 2 \end{cases}$$

4 - $\dfrac{1}{|3x-8|} > 20$

caso $3x-8>0$

$\dfrac{1}{3x-8} > 20 \Rightarrow 1 > 60x - 160$

$161 > 60x$

$\dfrac{161}{60} > x$

$$\boxed{S: \{x \in \mathbb{R} \mid \left]\tfrac{53}{20} ; \tfrac{8}{3}\right[\cup \left]\tfrac{8}{3} ; \tfrac{161}{60}\right[}$$

caso $3x-8<0$

$\dfrac{1}{-(3x-8)} > 20 \Rightarrow \dfrac{1}{-3x+8} > 20 \Rightarrow 1 > -60x+160$

$x \neq \dfrac{8}{3}$

$-159 > -60x$

$159 < 60x \Rightarrow \dfrac{159}{60} < x \Rightarrow \dfrac{53}{20} < x$