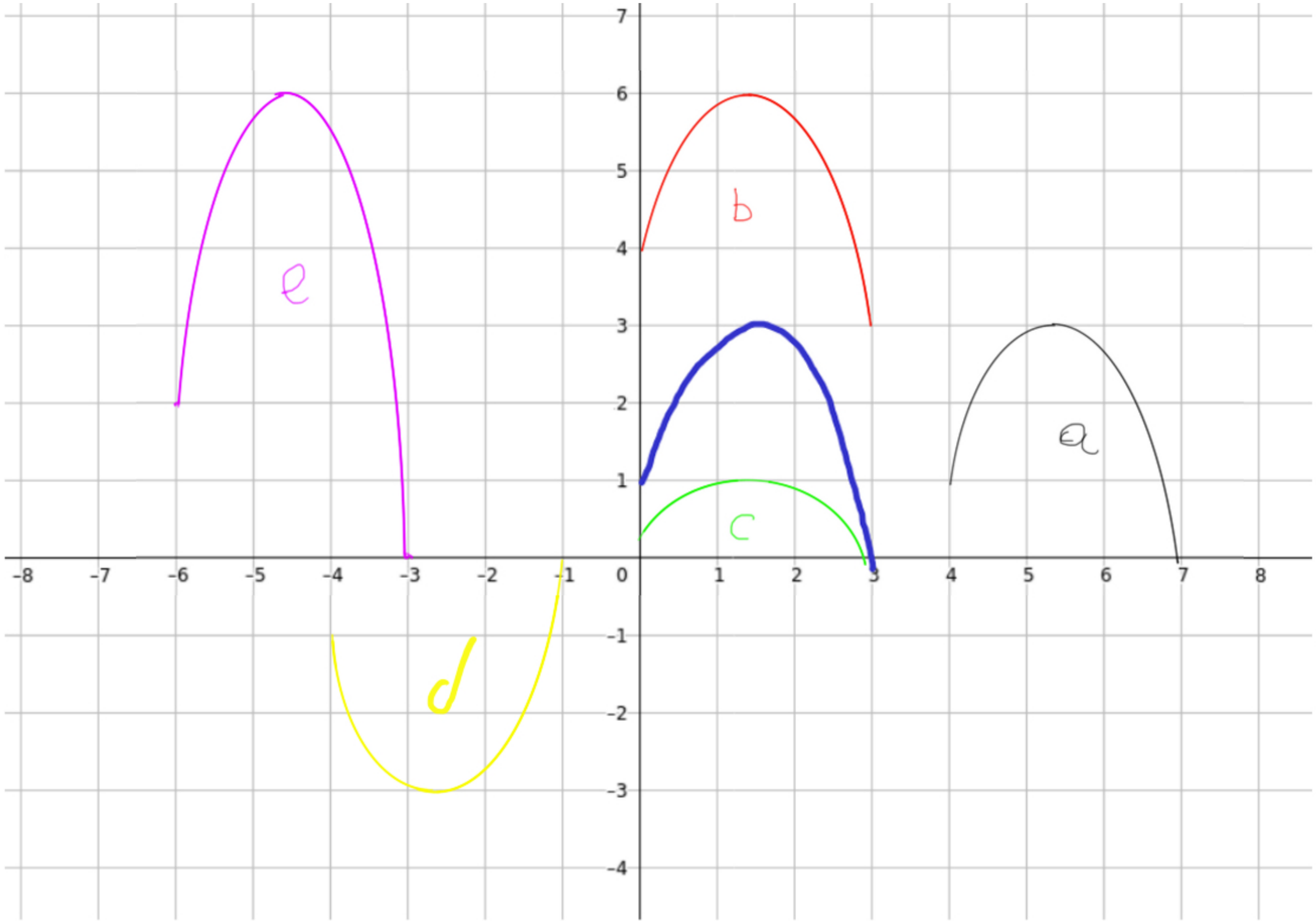
1-



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

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

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

$g(x) = 4x - 17$

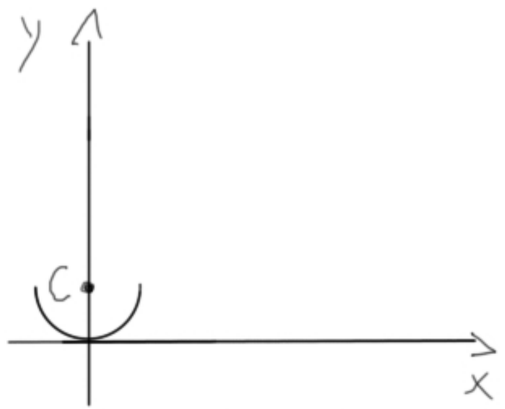
c) $y = \frac{2}{x} - 4$ $\xrightarrow{\text{isolando o inverso}}$ $x = \frac{2}{y} - 4 \longrightarrow x + 4 = \frac{2}{y} \rightarrow y = \frac{2}{(x+4)}$

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

3-

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

centro é $C(0;2)$ de raio 2



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

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

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

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

porém, queremos só a metade inferior

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

b)

$$A = \frac{\ell \cdot \operatorname{sen} 60 \cdot \ell}{2} = \frac{\frac{\sqrt{3}}{2} \cdot \ell^2}{2} = \frac{\ell^2 \sqrt{3}}{4}$$

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

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

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

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

$-1 = m \cdot 1$

$m = -1$

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

$y = -x - 2$

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

$y^2 = 4 - x^2$

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

terceira 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 dada por

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

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

caso $3x-8 > 0$

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

$161 > 60x$

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

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

caso $3x-8 < 0$

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

$-159 > -60x$

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

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