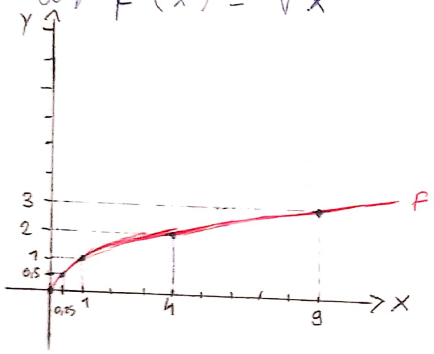
1)

a) $F(x) = \sqrt{x}$



$F(0,25) = 0,5$

$F(1) = 1$

$F(4) = 2$

$F(9) = 3$

$F(0) = 0$

1-b) $\lim_{y \to 0} \sqrt{y+4\pi} \rightarrow \sqrt{0+2^2 \cdot \pi} = 2\sqrt{\pi}$

R/ $\boxed{\lim_{y \to 0} \sqrt{y+4\pi} = 2\sqrt{\pi}}$

c) $g(x) = (8-x) \cdot (5+x) \rightarrow 40 + 8x - 5x - x^2 \rightarrow \underline{g(x) = -x^2 + 3x + 40}$

$$x = \frac{-3 \pm \sqrt{9 - 4 \cdot -1 \cdot 40}}{-2} \rightarrow x = \frac{-3 \pm \sqrt{9 + 160}}{-2} \rightarrow \frac{-3 \pm \sqrt{169}}{-2} \rightarrow$$

$$x' = \frac{-3 + 13}{-2} = \underline{-5} \qquad x'' = \frac{-3 - 13}{-2} = \underline{8}$$

Interceção de y:

$g(0) = -x^2 + 3x + 40$

$\underline{g(0) = 40}$

Vértice:

$x = -\frac{3}{-2} \rightarrow x = 1{,}5$

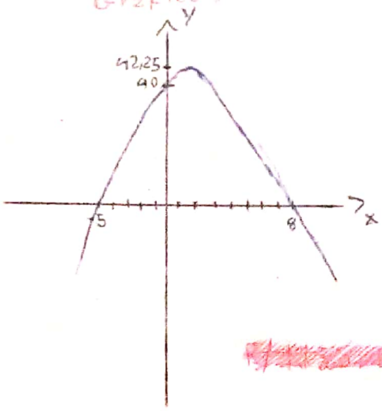
$Y = g(1{,}5) = -x^2 + 3x + 40$

$g(1{,}5) = -1{,}5^2 + 4{,}5 + 40$

$g(1{,}5) = -2{,}25 + 4{,}5 + 40$

$\underline{g(1{,}5) = 42{,}25}$

Gráfico:



c) verificando continuidade:

1. $g(c)$ tem que estar definido.

Verificar continuidade em $x = 1,5$.

2. $\lim\limits_{g \to c} g(x)$ existe.

3. $\lim\limits_{g \to c} g(x) = g(c)$

1. $g(1,5) = -1,5^2 + 4,5 + 40$

$g(1,5) = 42,25$.

2. $\lim\limits_{x \to 1,5} (-x^2 + 3x + 40)$

$\lim\limits_{x \to 1,5} (-x^2 + 3x + 40) = 42,25$

3. $\lim\limits_{g \to 2} g(x) = g(2)$, Logo:

É contínua.

d) No intervalo $-5 \leq X \leq 8$. (Raízes da função).

$$2 = \lim_{x \to -5} \left(\frac{-x^2 + 3x + 40}{8 - x} \right) \to \frac{-(-5)^2 + 3 . -5 + 40}{8 + 5} \to$$

$$\frac{40 - 15 - 25}{13} = \frac{0}{13} = \boxed{0}$$

R/ $\lim_{x \to -5} \left(\frac{-x^2+3x+40}{8-x} \right) = 0$

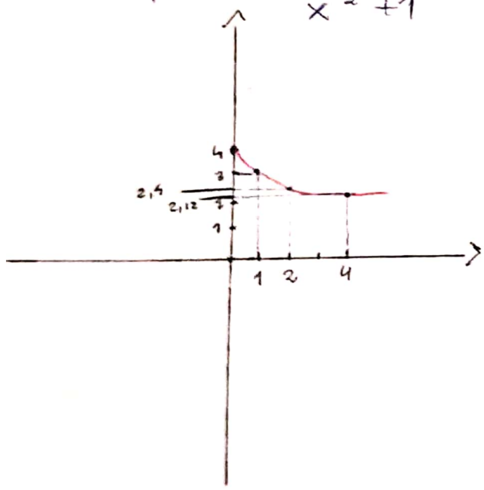
3 - a) $f(x) = \frac{2x^2 + 4}{x^2 + 1}$

$F(0) = \underline{4}$

$F(1) = \underline{3}$

$F(2) = \frac{12}{5} = \underline{2,4}$

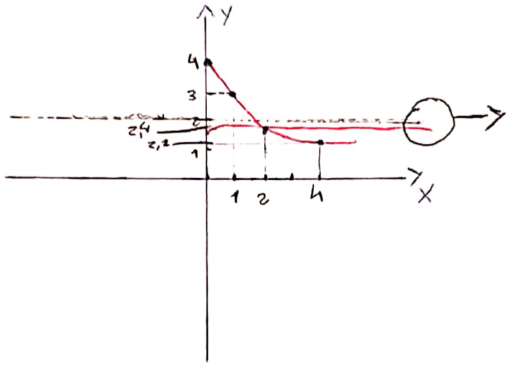
$F(4) = \frac{2 . 16 + 4}{16 + 1} = \frac{36}{17} = \underline{2,12}$



b) $\lim\limits_{x \to \infty} \dfrac{2x^2 \cancel{+4}}{x^2 \cancel{+1}} \rightarrow \dfrac{2\cancel{x^2}}{\cancel{x^2}} \rightarrow \boxed{\lim\limits_{x \to \infty} = 2}$

Justificativa: Como tende ao infinito, os valores "+4" e "+1" acabam sendo desprezíveis, por isso os cortei.

c)



Sempre se aproximando de 2, mas nunca chegando nele.

4- $\lim\limits_{x \to 8} \dfrac{-x^2+3x+40}{8-x}$ → Equivale a $(8-x).(5+x)$, logo:

$$\frac{\cancel{(8-x)}.(5+x)}{\cancel{8-x}} \rightarrow 13$$

$$\boxed{\lim_{x \to 8} = 13}$$

5- $\lim\limits_{u \to 2} \dfrac{\sqrt{u^2+12}-4}{u-2} \cdot \dfrac{(\sqrt{u^2+12}+4)}{(\sqrt{u^2+12}+4)} \rightarrow \dfrac{(\cancel{\sqrt{u^2+12}})^2 + 4.-4}{(u-2).(\sqrt{u^2+12}+4)} \rightarrow \dfrac{12-16+u^2}{(u-2).(\sqrt{u^2+12}+4)}$

$$\frac{u^2-4^{\to 2^2}}{(u-2).(\sqrt{u^2+12}+4)} \rightarrow \frac{\cancel{(u-2)}.(u+2)}{\cancel{(u-2)}.(\sqrt{u^2+12}+4)} \rightarrow \frac{4}{\sqrt{16}+4} \rightarrow \frac{4}{8} \rightarrow \boxed{\frac{1}{2}}$$