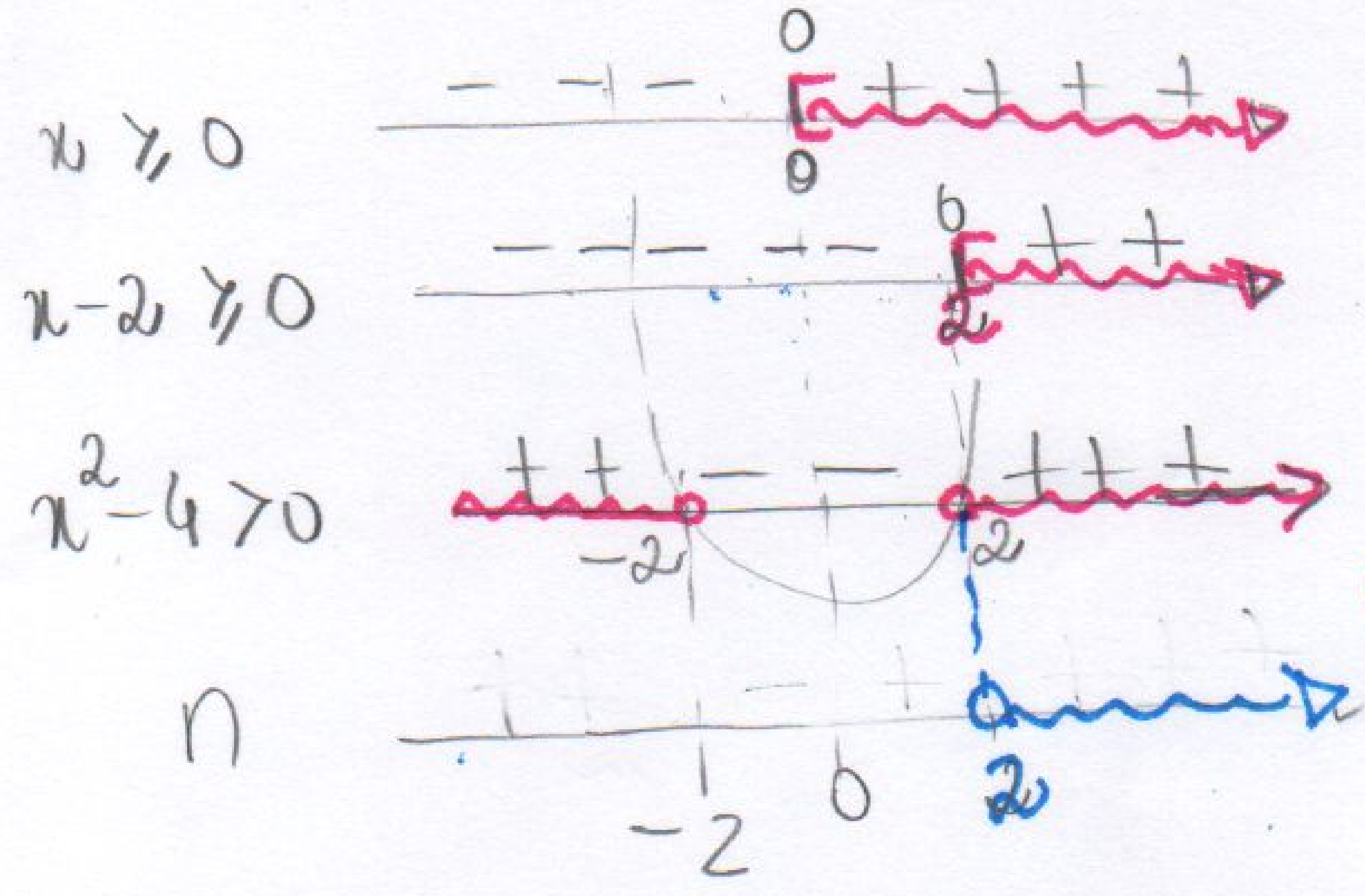
(b)



$\text{Dom} f_2 = (2,+\infty)$

$\lim\limits_{x\to 2^-} f_2(x)$ não faz sentido pois $\text{Dom} f_2 = (2,+\infty)$

$$\lim_{x\to 2^+} f_2(x) = \lim_{x\to 2^+}\left(\frac{\sqrt{x}-\sqrt{2}}{\sqrt{x^2-4}} + \frac{\sqrt{x-2}}{\sqrt{x^2-4}}\right) =$$

$$= \lim_{x\to 2^+}\left[\frac{\sqrt{x}-\sqrt{2}}{\sqrt{x^2-4}}\,\frac{(\sqrt{x}+\sqrt{2})}{(\sqrt{x}+\sqrt{2})}\,\frac{\sqrt{x^2-4}}{\sqrt{x^2-4}} + \sqrt{\frac{x-2}{(x-2)(x+2)}}\right] =$$

$\downarrow$ $x^2-4 \neq 0$

$$= \lim_{x\to 2^+}\left(\frac{(x-2)\sqrt{x^2-4}}{(x^2-4)(\sqrt{x}+\sqrt{2})} + \sqrt{\frac{1}{x+2}}\right) =$$

$\downarrow$ $x-2 \neq 0$

$$= \lim_{x\to 2^+}\left(\frac{\cancel{(x-2)}\sqrt{x^2-4}}{\cancel{(x-2)}(x+2)(\sqrt{x}+\sqrt{2})} + \sqrt{\frac{1}{x+2}}\right)$$

$\downarrow$ $x-2 \neq 0$

$$= \lim_{x\to 2^+}\left(\frac{\sqrt{x^2-4}}{\sqrt{x}+\sqrt{2}} + \sqrt{\frac{1}{x+2}}\right) = \frac{\sqrt{4-4}}{\sqrt{2}+\sqrt{2}} + \sqrt{\frac{1}{2+2}} = \frac{0}{2\sqrt{2}} + \frac{1}{2} = \frac{1}{2}$$

$\downarrow$ $x-2 \neq 0$