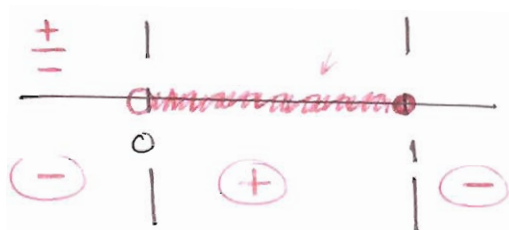


$$f(x) = \sqrt{\frac{1-x}{x}}$$

1

$$\text{Dom}(f) = \left\{ x \in \mathbb{R} \mid \frac{1-x}{x} \geq 0 \right\}$$



$$f(1) = 0$$

$$\text{Logo } \boxed{\text{Dom } f =]0, 1]}$$

Assíntotas

Verticais

$$\lim_{x \rightarrow 0^+} f(x) = \lim_{x \rightarrow 0^+} \sqrt{\frac{1-x}{x}} = \frac{1}{0^+} = +\infty$$

Logo, $x=0$ é A.V.

f não tem assíntotas horizontais nem oblíquas.

$$f'(x) = \frac{1}{2\sqrt{\frac{1-x}{x}}} \cdot \frac{-x - (1-x)}{x^2} = -\frac{1}{2x^2\sqrt{\frac{1-x}{x}}} < 0$$

$\forall x \in \text{Dom } f$

Logo, f é decrecente.

$$f''(x) = \frac{1}{2} \cdot \frac{\left(2x\sqrt{\frac{1-x}{x}} + x^2 \frac{1}{2\sqrt{\frac{1-x}{x}}} \cdot \left(-\frac{1}{x^2} \right) \right)}{x^4 \left(\frac{1-x}{x} \right)}$$

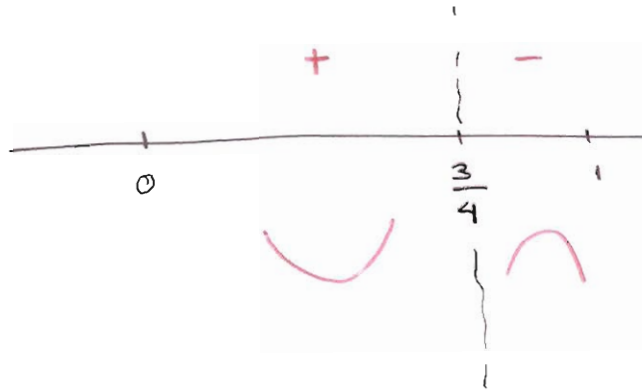
$$= \frac{\frac{4x\left(\frac{1-x}{x}\right) - 1}{2\sqrt{\frac{1-x}{x}}}}{2x^4 \left(\frac{1-x}{x} \right)}$$

$$= \frac{4 - 4x - 1}{4x^4 \left(\frac{1-x}{x} \right)^{3/2}} = \frac{3 - 4x}{4x^4 \left(\frac{1-x}{x} \right)^{3/2}}$$

Análise do sinal de f''

$$f''(x) = 0$$

$$\Leftrightarrow \boxed{x = \frac{3}{4}}$$



$$f\left(\frac{3}{4}\right) = \sqrt{\frac{\frac{1}{4}}{\frac{3}{4}}} = \frac{1}{\sqrt{3}}$$

Esboço do gráfico de f

