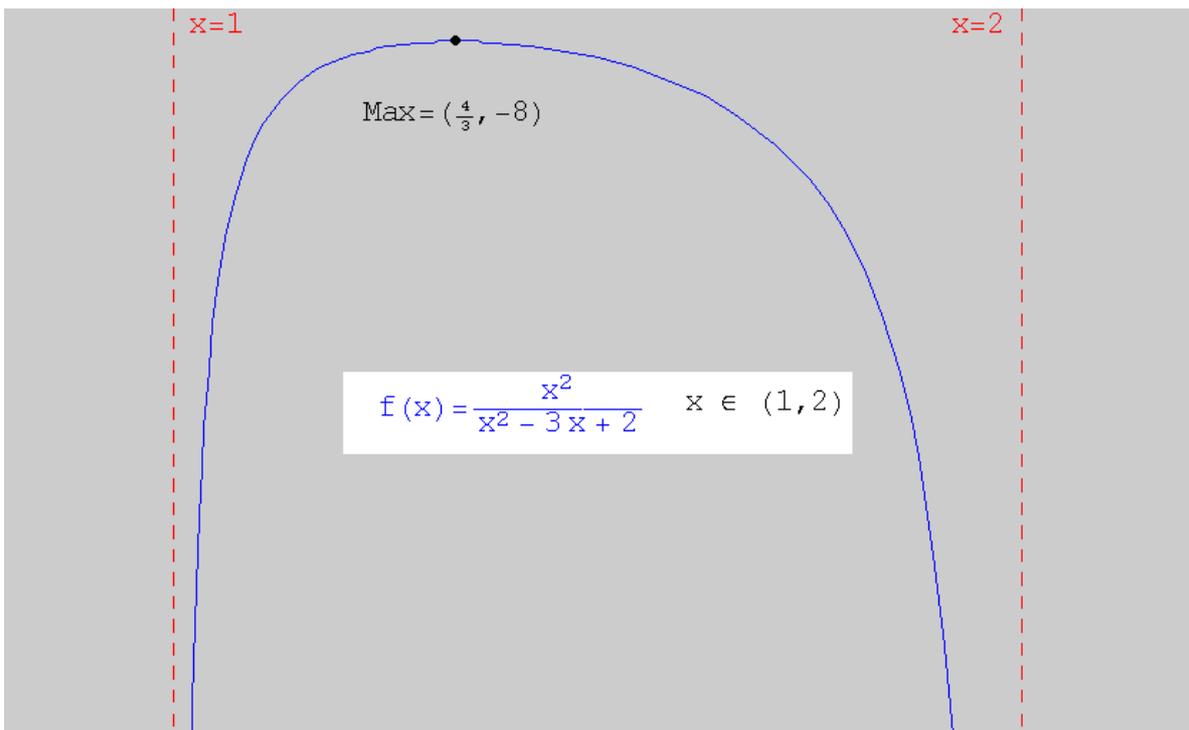
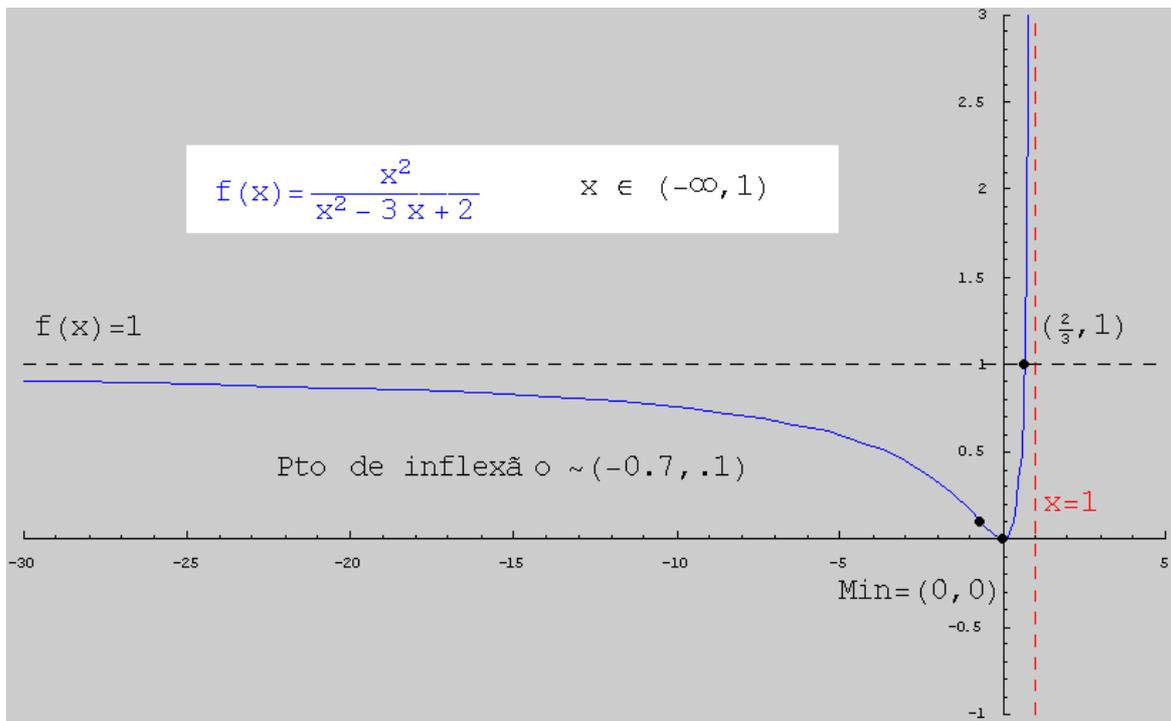


# Estudo de Funções

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

|   |                           |   |  |
|---|---------------------------|---|--|
| 1 | DOMÍNIO                   | $f : A \rightarrow B$   | $A = \mathbb{R} - \{1, 2\}$  |
| 2 | ZEROS                     | $f(x) = 0$<br>$x = 0 \Rightarrow y = 0$   | $(x, y)$<br>$(0, 0)$   |
| 3 | $x \rightarrow \pm\infty$ | $\lim_{x \rightarrow -\infty} f(x) = 1^-$<br>$\lim_{x \rightarrow +\infty} f(x) = 1^+$  | $(-\infty, 1^-)$<br>$(+\infty, 1^+)$   |
| 4 | ASSÍNTOTAS                | $x = 1$ , $x = 2$<br>$\lim_{x \rightarrow 1^-} f(x) = +\infty$<br>$\lim_{x \rightarrow 1^+} f(x) = -\infty$<br>$\lim_{x \rightarrow 2^-} f(x) = -\infty$<br>$\lim_{x \rightarrow 2^+} f(x) = +\infty$ | $(1^-, +\infty)$<br>$(1^+, -\infty)$<br>$(2^-, -\infty)$<br>$(2^+, +\infty)$ |
| 5 | MAX - MIN                 | $f'(x) = 0$<br>$x = 0 \Rightarrow y = 0$<br>$x = 4/3 \Rightarrow y = -8$  | $(0, 0)_{min}$<br>$(4/3, -8)_{max}$  |
| 6 | PONTO DE INF.             | $f''(x) = 0$  | SIM: UM<br>$x < 0$   |

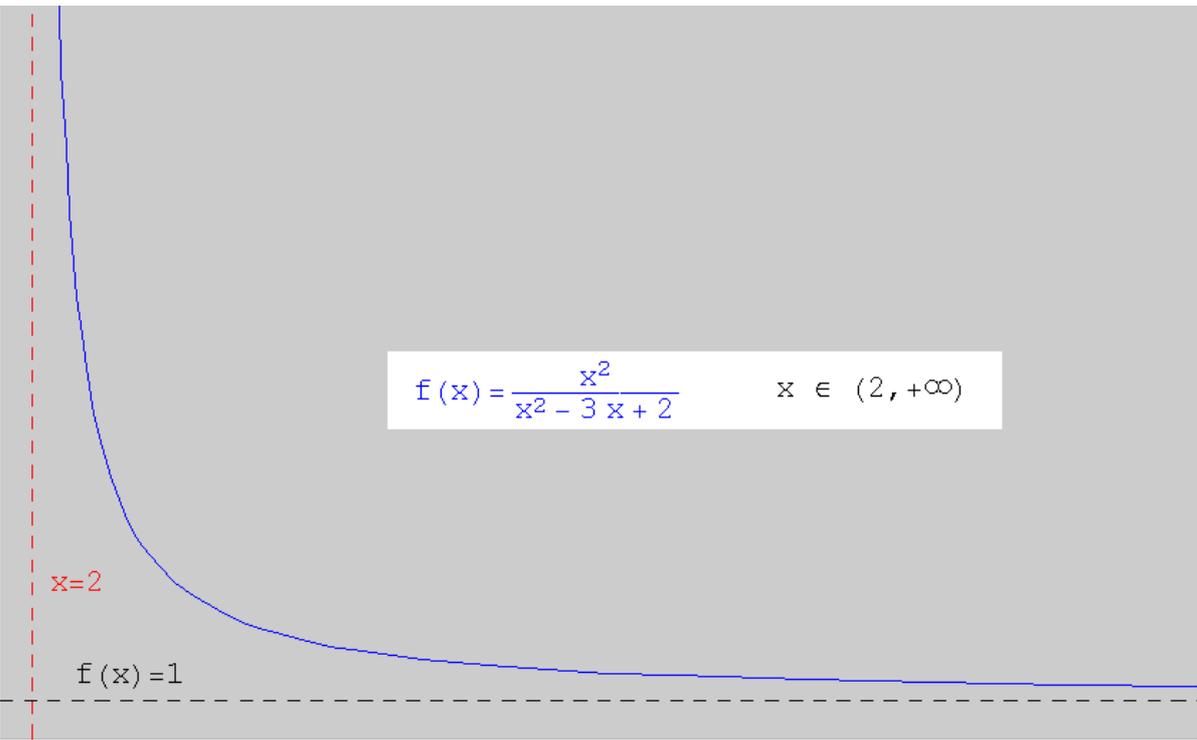
$$f'(x) = \frac{4x - 3x^2}{(x^2 - 3x + 2)^2}$$



$$f(x) = \frac{x^2}{x^2 - 3x + 2} \quad x \in (2, +\infty)$$

$x=2$

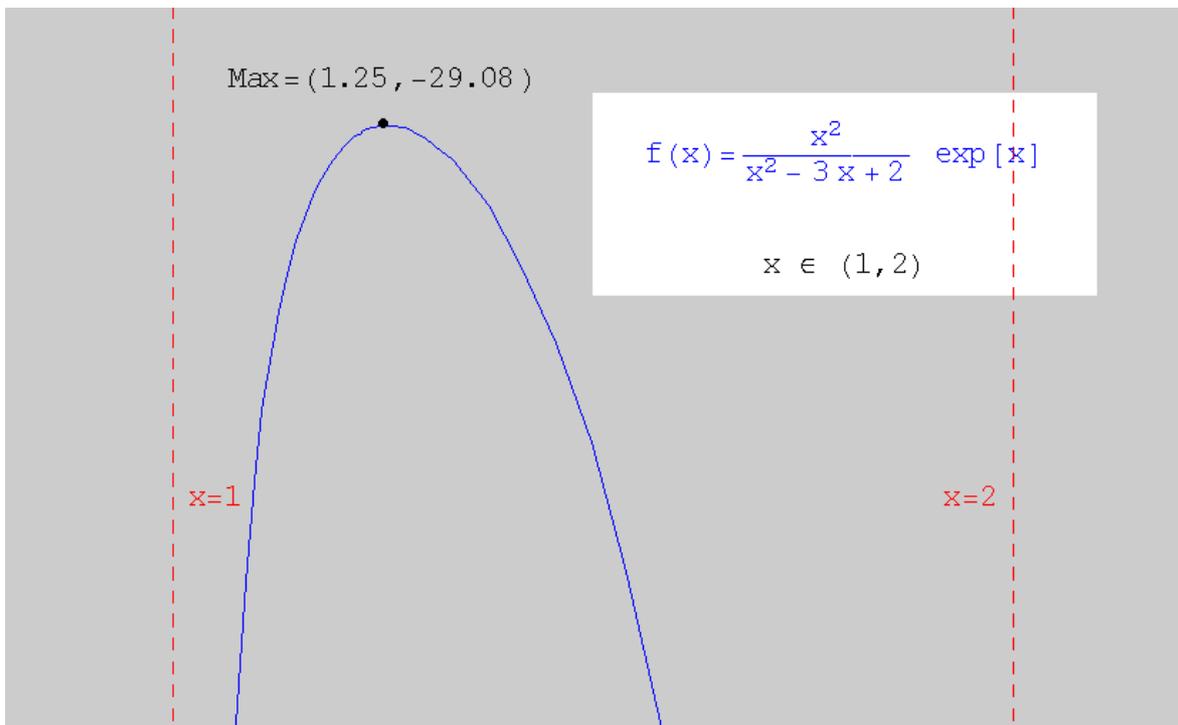
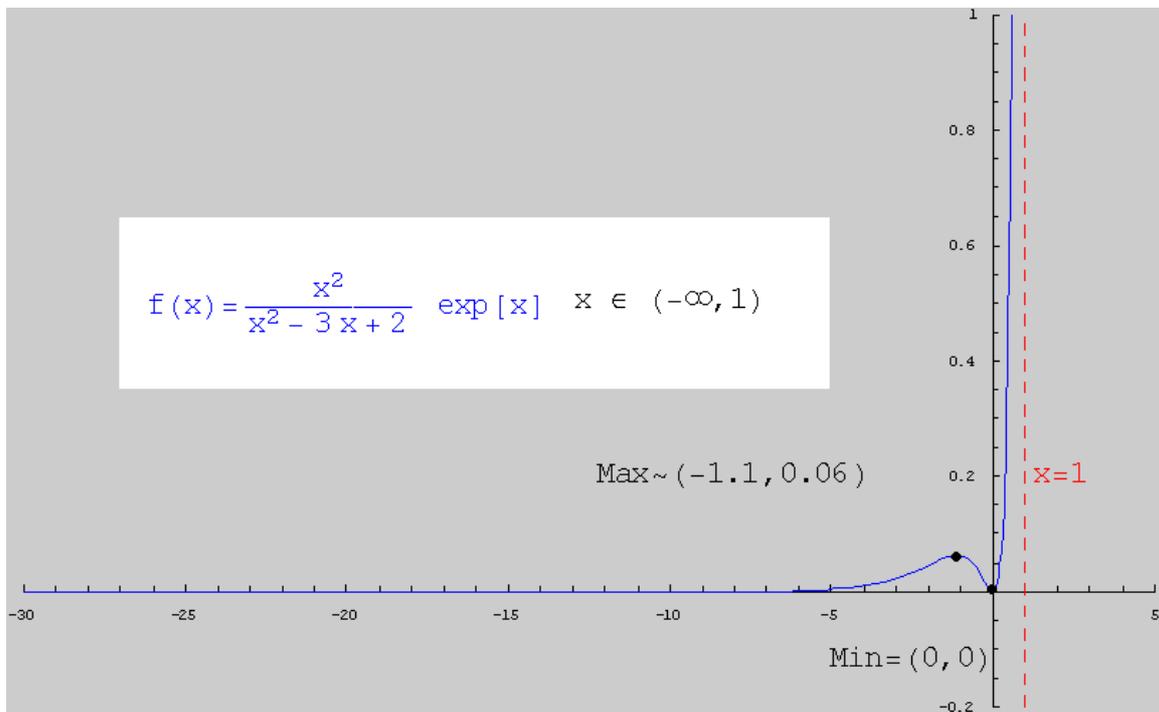
$f(x)=1$

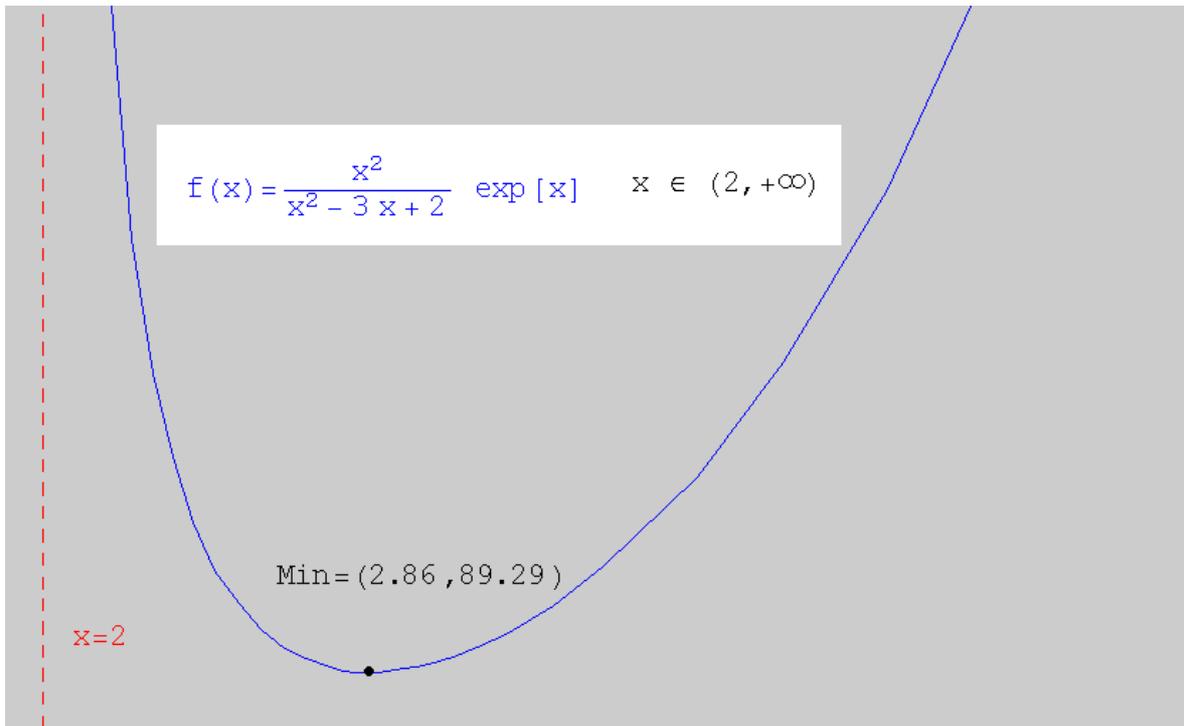


$$f(x) = \frac{x^2}{x^2 - 3x + 2} \exp[x]$$

|   |                           |  |   |
|---|---------------------------|--|---|
| 1 | DOMÍNIO                   | $f : A \rightarrow B$  | $A = \mathbb{R} - \{1, 2\}$   |
| 2 | ZEROS                     | $f(x) = 0$<br>$x = 0 \Rightarrow y = 0$  | $(x, y)$<br>$(0, 0)$  |
| 3 | $x \rightarrow \pm\infty$ | $\lim_{x \rightarrow -\infty} f(x) = 0^+$<br>$\lim_{x \rightarrow +\infty} f(x) = +\infty$   | $(-\infty, 0^+)$<br>$(+\infty, +\infty)$  |
| 4 | ASSÍNTOTAS                | $x = 1, x = 2$<br>$\lim_{x \rightarrow 1^-} f(x) = +\infty$<br>$\lim_{x \rightarrow 1^+} f(x) = -\infty$<br>$\lim_{x \rightarrow 2^-} f(x) = -\infty$<br>$\lim_{x \rightarrow 2^+} f(x) = +\infty$ | $(1^-, +\infty)$<br>$(1^+, -\infty)$<br>$(2^-, -\infty)$<br>$(2^+, +\infty)$              |
| 5 | MAX - MIN                 | $f'(x) = 0$<br>$x \approx -1.1 \Rightarrow y \approx 0.06$<br>$x = 0 \Rightarrow y = 0$<br>$x \approx 1.25 \Rightarrow y \approx -29.08$<br>$x \approx 2.86 \Rightarrow y \approx 89.29$           | $(-1.1, 0.06)_{max}$<br>$(0, 0)_{min}$<br>$(1.25, -29.08)_{max}$<br>$(2.86, 89.29)_{min}$ |
| 6 | PONTO DE INF.             | $f''(x) = 0$   | SIM: DOIS<br>$x < 0$  |

$$f'(x) = \frac{x(x^3 - 3x^2 - x + 4)}{(x^2 - 3x + 2)^2} \exp[x]$$





## Estudo de Funções - aula do dia 3/10

