

(Absolute extrema)

Decide if the absolute extrema (min., max.) of the following functions exist on the given intervals (I). If so, find them.

1. $f(x) = x^2 \ln x, \quad I = \langle 1; e \rangle$

2. $f(x) = \frac{x^2+4}{x}, \quad I = (0; 3)$

Asymptotes

Determine all possible asymptotes of following functions:

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

4. $f(x) = \sqrt{x+x^2}$

5. $f(x) = \frac{x^3}{4-x^2}$