

## Asymptotes

Determine all possible asymptotes of following functions:

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

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

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

## Convex, Concave, inflection points

Determine the intervals where the functions are convex or concave, find the inflection points:

4.  $f(x) = e^{\frac{1}{x}}$

5.  $f(x) = \ln(1 + x^2)$

## Behavior of a function

Investigate complete behavior of following functions, sketch the complete graph:

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

7.  $f(x) = \frac{e^x}{1+x}$

8.  $f(x) = e^{-x^2}$