

CURVE SKETCHING

December 6th, 2018

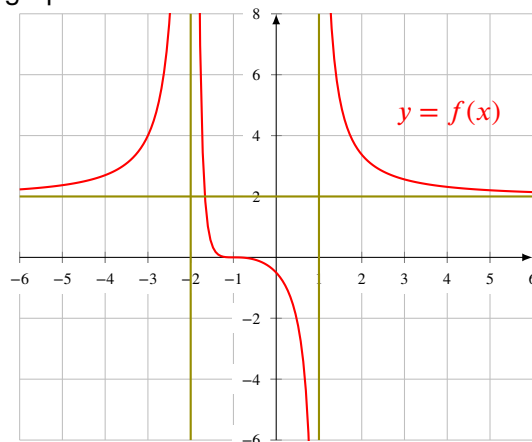
Unexpected asymptotes

Find the two asymptotes of the function

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

Backwards graphing

We know that $f(x) = \frac{P(x)}{Q(x)}$ where P and Q are two polynomials.
Here is its graph:

Recover $f(x)$.

Slant asymptote

Study the behavior at infinity of

$$f(x) = \frac{x^2 + 3}{x + 1}$$

The function \tanh , defined by

$$\tanh x = \frac{e^x - e^{-x}}{e^x + e^{-x}},$$

is called the “hyperbolic tangent”.

- 1 Find its two asymptotes
- 2 Study its monotonicity
- 3 Study its concavity
- 4 With this information, sketch its graph.

¹This slide was not covered, but that's a good exercise for you to practice.