Curve sketching

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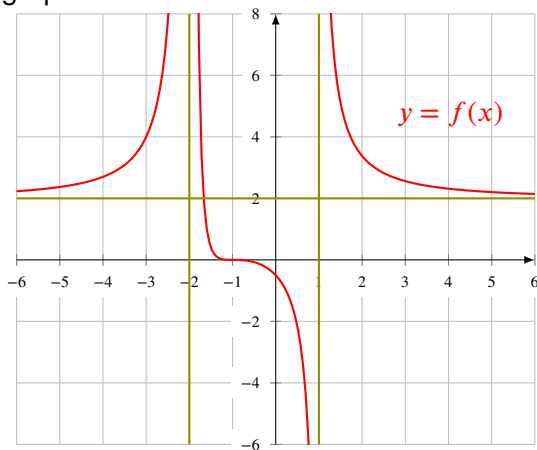
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Find the two asymptotes of the function

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

Backwards graphing

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

$y = f(x)$

Recover $f(x)$.

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.

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