Ex. Use intercepts & vertical/horizontal asymptotes to sketch the graph of \( y = \frac{2-x}{x^2-1} \)

**Intercepts**
- **y-int:** \( x=0 \Rightarrow y = \frac{2}{-1} = -2 \), \( y=-2 \)
- **x-int:** \( y=0 \Rightarrow 0 = \frac{2-x}{x^2-1} \Rightarrow x=2 \)

**H.A.'s (Look at behaviour as \( x \to \pm \infty \))**
\[
\lim_{x \to \pm \infty} \frac{2-x}{x^2-1} = \lim_{x \to \pm \infty} \frac{\frac{2}{x^2} - \frac{1}{x^2}}{1 - \frac{1}{x^2}} = 0
\]
So. **H.A. at \( y=0 \)**

**V.A.'s (Look for division by \( \phi \). Candidates are \( x=\pm 1 \))**
\[
\lim_{x \to 1^-} \frac{2-x}{x^2-1} = \frac{1}{0^-} = -\infty
\]
V.A. at \( x=1 \)
\[
\lim_{x \to 1^+} \frac{2-x}{x^2-1} = \frac{1}{0^+} = +\infty
\]
\[
\lim_{x \to -1^-} \frac{2-x}{x^2-1} = \frac{1}{0^+} = +\infty
\]
V.A. at \( x=-1 \)
\[
\lim_{x \to -1^+} \frac{2-x}{x^2-1} = \frac{1}{0^-} = -\infty
\]

With all this info, we can now sketch.