N7. Consider the genus 1 curve
\[ C: y^2 = 2x^4 - 17. \]
Writing \( \theta = \sqrt[4]{\frac{17}{2}} \) and \( L = \mathbb{Q}(\theta) \), we can consider the map
\[ \gamma: C(\mathbb{Q}) \rightarrow L^x/L^{x^2}\mathbb{Q}^x \]
\[ (x, y) \mapsto x - \theta \]
which plays the same role we have seen before. Check that any \( \delta \in L^x \) representing an element in the image of \( \gamma \) would have to have \( N(\delta) \in 2\mathbb{Q}^{times 2} \). Verify that such \( \delta \) do not exist.

For added satisfaction, check that \( C \) does have points everywhere locally.

N8. Magma has a command \texttt{TwoCoverDescent} that implements the computation of fake 2-Selmer sets of hyperelliptic curves. Read its documentation and explain its computations for the curve
\[ C: y^2 = -x^6 + 2x^5 + 3x^4 - x^3 + x^2 + x - 3 \]
You might want to run \texttt{SetVerbose("Selmer", 4)}; to see some of the work it is doing.

N9. Determine the rational points on
\[ C: y^2 = (x^2 + 3)(x^4 - 18x^2 + 9). \]