Synthetic Division is a condensed method of long division. It is quick and easy. Unfortunately, it can only be used when the divisor is in the form of \((x \pm a)\)

Review long division: \[
\frac{9x^2 - 5x + 1}{x - 1}
\]

Synthetic division:
\[
\begin{align*}
&9x^2 - 5x + 1 \\
&\div (x - 1) \\
&2x^3 - 5x^2 - 3 \\
&\div (x + 1)
\end{align*}
\]

\[
\begin{align*}
&x^4 - 5x^2 + 10x \\
&\div (x + 3) \\
&x^3 + 125 \\
&\div (x + 5)
\end{align*}
\]

Reminders:
1. Write both polynomials in standard form.
2. Fill in all missing terms with a place holder of zero.
3. Write your answer as a polynomial that is **one degree less** than the dividend (numerator).