

Synthetic Division

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:

$$\frac{9x^2 - 5x + 1}{x - 1}$$

$$\frac{2x^3 - 5x^2 - 3}{x + 1}$$

$$\frac{x^4 - 5x^2 + 10x}{x + 3}$$

$$\frac{x^3 + 125}{x + 5}$$

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).