

R6 Synthetic Division

$x^3 + 4x^2 - x + 5$ divided by $x-2$ ^{Divisor}
Zero

$$\begin{array}{r|rrrr} 2 & 1 & 4 & -1 & 5 \\ & & 2 & 12 & 22 \\ \hline & 1 & 6 & 11 & 27 \\ & & x^2 & + 6x & + 11 & + \frac{27}{x-2} \end{array}$$

Quotient: $x^2 + 6x + 11$
 Remainder: 27

$x^5 + 1$ divided by $x+1$

$$\begin{array}{r|rrrrrr} -1 & 1 & 0 & 0 & 0 & 0 & 1 \\ & & -1 & 1 & -1 & 1 & -1 \\ \hline & 1 & -1 & 1 & -1 & 1 & 0 \end{array}$$

Quotient: $x^4 - x^3 + x^2 - x + 1$
 Remainder: 0

Is $x+3$ a factor of $3x^6 - 27x^4 + 2x^2 - 27$?

$$\begin{array}{r|rrrrrrr} -3 & 3 & 0 & -27 & 0 & 2 & 0 & -27 \\ & & -9 & 27 & 0 & 0 & -6 & 18 \\ \hline & 3 & -9 & 0 & 0 & 2 & -6 & \textcircled{-9} \end{array}$$

No