Synthetic Division

$(x^2+7x+13) \div (x+4)$

$x+4=0$

$x=-4$

Zero

$$\begin{array}{c|ccc} -4 & 1 & 7 & 13 \\ & & -4 & -12 \\ \hline & 1 & 3 & 1 \end{array}$$

Remainder

$$x+3+\frac{1}{x+4}$$

$(2x^2+3x-4) \div (x-2)$

2	2	3	−4
		4	14
	2	7	10

$$2x+7+\frac{10}{x-2}$$

$$(n^4 - 17n^3 + 81n^2 - 65n - 56) \div (n - 8)$$

8	1	−17	81	−65	−56
		8	−72	72	56
	1	−9	9	7	0

$$n^3 - 9n^2 + 9n + 7$$

$$(n^4 + 5n^3 - 6n + 3) \div (n + 3)$$

-3	1	5	0	-6	$+3$
		-3	-6	18	-36
	1	2	-6	12	-33

$$n^3 + 2n^2 - 6n + 12 - \frac{33}{n+3}$$

$$(x^5 + 5x^2 + x + 2) \div (x+1)$$

$$\begin{array}{r|cccccc} -1 & 1 & 0 & 0 & 5 & 1 & 2 \\ & & -1 & 1 & -1 & -4 & 3 \\ \hline & 1 & -1 & 1 & 4 & -3 & \boxed{5} \end{array}$$

$$x^4 - x^3 + x^2 + 4x - 3 + \frac{5}{x+1}$$

$(3x^3+5x^2+8x+7) \div (3x+2)$

$$\begin{array}{c|cccc} -\frac{2}{3} & 3 & 5 & 8 & 7 \\ & & -2 & -2 & -4 \\ \hline & 3 & 3 & 6 & 3 \end{array}$$

$$\frac{3x^2+3x+6}{3} + \frac{3}{3x+2}$$

$$x^2+x+2+\frac{3}{3x+2}$$