

7.3 Long Division

$$\frac{x^2 + 4x + 4}{x + 2}$$

$x + 2$

$$\begin{array}{r}
 x+2 \overline{) x^2 + 4x + 4} \\
 \underline{- x^2 + 2x} \\
 2x + 4 \\
 \underline{-(2x + 4)} \\
 0
 \end{array}$$

check $(x+2)(x+2)$

$$x^2 + 4x + 4$$

$$\begin{array}{r}
 49\frac{1}{3} \\
 3 \overline{) 148} \\
 \underline{- 12} \\
 28 \\
 \underline{- 27} \\
 1
 \end{array}$$

$$\begin{array}{r}
 5 \\
 3 \overline{) 15} \\
 \underline{- 15} \\
 0
 \end{array}$$

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

$$x + 1$$

$$x^3 - x^2 + 4x - 6 + \frac{7}{x+1}$$

$$x+1 \overline{) x^4 + 0x^3 + 3x^2 - 2x + 1}$$

$$- x^4 + 1x^3$$

$$\hline -x^3 + 3x^2$$

$$- -x^3 - x^2$$

$$4x(x+1)$$

$$4x^2 - 2x$$

$$- (4x^2 + 4x)$$

$$\hline -6x + 1$$

$$- -6x - 6$$

$$\hline 7$$

$$\frac{x^3 - 43x + 42}{x^2 + 6x - 7}$$

$$x(x^2 + 6x - 7)$$

$$x^2 + 6x - 7$$

$$x - 6$$

$$x^2 + 6x - 7 \overline{) x^3 + 0x^2 - 43x + 42}$$

$$- x^3 + 6x^2 - 7x$$

$$-6x^2 - 36x + 42$$

$$- -6x^2 - 36x + 42$$

0

Synthetic Division

$$\frac{1x^2 - 4x - 12}{x - 4}$$

$$x - 4$$

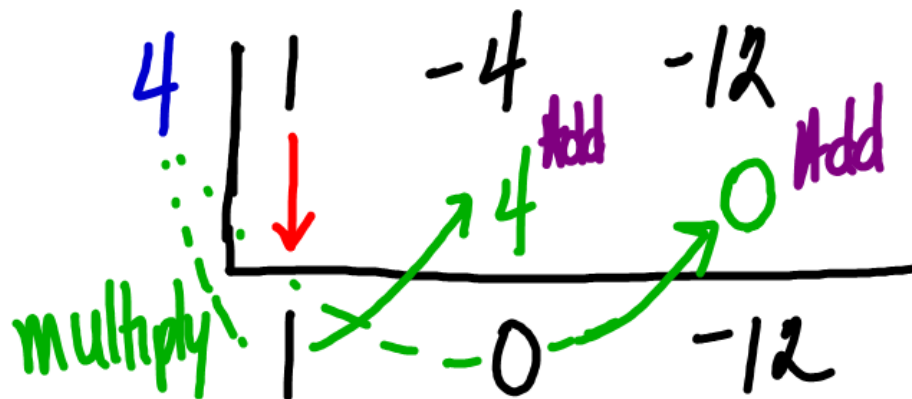
$$x - 4$$

$$-4$$

$$+4$$

$$x - 4 = 0$$

$$x = 4$$



Coefficient of x Constant Remainder

$$x + \frac{-12}{x-4}$$

$$\frac{x^3 + x^2 - 9x - 9}{x+1}$$

-1	1	1	-9	-9
	↓			
		-1	0	9
	1	0	-9	0
		x^2	x	Constant
				Remainder

$$x^2 - 9$$

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

$$x^3 + 0x^2 + 0x + 3$$

$$x - 2$$

$$x - 2 = 0$$

$$x = 2$$

2	1	0	0	3
	↓	→ 2	4	8
	1	2	4	11
	x^2	x	C	R

$$x^2 + 2x + 4 + \frac{11}{x-2}$$

$$f(x) = 1x^2 + 3x + 1$$

$$f(2) = 2^2 + 3(2) + 1$$

$$f(2) = 4 + 6 + 1$$

$$f(2) = 11$$

2	1	3	1
	↓	2	10
	1	5	11

$$f(x) = 2x^4 + 3x^3 - 5x^2 + 2x - 4$$

$$f(3) = 200$$

3	2	3	-5	2	-4
		6	27	66	204
	2	9	22	68	200

$$\frac{208}{3} = 204$$

$$p^{446}$$

$$72 - 96 \times 4$$