

Per trovare un MCD  
in un siffatto anello:

$m, n$  dati (interi, naturali,  
polinomi)

$$m = nq_1 + r_1 \quad m - nq_1 = r_1$$

$$n = r_1q_2 + r_2 \quad n - r_1q_2 = r_2$$

$$r_1 = r_2q_3 + r_3$$

⋮

$$r_{k-2} = r_{k-1}q_k + r_k$$

$$r_{k-1} = r_kq_{k+1}$$

$$\text{MCD} = r_k$$

$$\begin{array}{r|l} 2499 & 1617 \\ \hline \textcircled{882} & 1 \end{array}$$

$$\begin{array}{r|l} 1617 & 882 \\ \hline 735 & 1 \end{array}$$

$$\begin{array}{r|l} 882 & 735 \\ \hline 147 & 1 \end{array}$$

$$\begin{array}{r|l} 735 & \textcircled{147} \\ \hline 0 & 5 \end{array}$$

MCD

$$\begin{array}{r|l} x^3 + 15x^2 + 71x + 105 & x^3 + 9x^2 + 26x + 24 \\ \hline -x^3 - 9x^2 - 26x - 24 & 1 \end{array}$$

//  $6x^2 + 45x + 81$

$$\begin{array}{r|l} x^3 + 9x^2 + 26x + 24 & 6x^2 + 45x + 81 \\ \hline -x^3 - \frac{15}{2}x^2 - \frac{27}{2}x & \frac{x}{6} + \frac{1}{4} \end{array}$$

//  $\frac{3}{2}x^2 + \frac{25}{2}x + 24$

$$-\frac{3}{2}x^2 - \frac{45}{4}x - \frac{81}{4}$$

$$// \quad \frac{5}{4}x + \frac{15}{4}$$

$$6x^2 + 45x + 81$$

$$-6x^2 - 18x$$

$$\hline // \quad 27x + 81$$

$$-27x - 81$$



$$\frac{5}{4}x + \frac{15}{4}$$

$$\frac{24x}{5} + \frac{98}{5}$$

$$x + 3$$

Eliminazione di  $x$  da:

$$x^3 + (\alpha + 1)x + 12$$

$$-x^3 - \alpha x$$

$$\hline // \quad x + 12$$

$$x^2 + \alpha$$

$$-x^2 - 12x$$

$$\hline // \quad -12x + \alpha$$

$$+12x + 144$$

$$\hline // \quad \alpha + 144$$

$$\left| \begin{array}{l} x^2 + \alpha \\ \hline x \end{array} \right.$$

$$\left| \begin{array}{l} x + 12 \\ \hline x - 12 \end{array} \right.$$

$$\begin{array}{c}
 \underbrace{\quad}_1 \\
 \underbrace{\quad}_2 \\
 \underbrace{\quad}_3 \\
 \underbrace{\quad}_4
 \end{array}
 \left( \begin{array}{cccccc}
 1 & 0 & (\alpha+1) & 12 & 0 \\
 0 & 1 & 0 & (\alpha+1) & 12 \\
 1 & 0 & \alpha & \alpha & 0 \\
 0 & 1 & 0 & \alpha & 0 \\
 0 & 0 & 1 & 0 & \alpha
 \end{array} \right) = \begin{array}{c} \parallel \\ \parallel \end{array}$$