

④ let $p(x) = x^3 - 3x^2 + x + 2$
 $q(x) = x - 2$
 $r(x) = -2x + 4$

$p(x) = q(x)q(x) + r(x)$ [div. algo. for poly.]

$x^3 - 3x^2 + x + 2 = q(x)[x - 2] + (-2x + 4)$

$\Rightarrow q(x) = \frac{x^3 - 3x^2 + x + 2 + 2x - 4}{x - 2}$
 $= \frac{x^3 - 3x^2 + 3x - 2}{x - 2}$

$$\begin{array}{r} x^2 - x + 1 \\ x - 2 \overline{) x^3 - 3x^2 + 3x - 2} \\ \underline{x^3 - 2x^2} \\ -x^2 + 3x - 2 \\ \underline{-x^2 + 2x} \\ x - 2 \\ \underline{x - 2} \\ 0 \end{array}$$

$\therefore q(x) = x^2 - x + 1$

5① degree $p(x) =$ degree $q(x)$

$p(x) = 2x^2 - 4$
 $q(x) = 2$

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

$\therefore q(x) = x^2 - 2$

deg $p(x) =$ degree $q(x)$ [each 2]