

ESERCIZI DI SINTESI SULLE SCOMPOSIZIONI

360 $5x^3 + 3x^2 - 5x - 3 = x^2(5x+3) - (5x+3) = (5x+3)(x^2-1) = (5x+3)(x+1)(x-1)$

361 $x^4 - 6 - x^3 - 3x + x^2 = x^4 - x^3 + x^2 - 3x - 6$

$P(1) = 1 - 1 + 1 - 3 - 6 \neq 0$

$P(-1) = 1 + 1 + 1 + 3 - 6 = 0$

1	-1	1	-3	-6
-1	-1	2	-3	6
1	-2	3	-6	0

$= (x+1)(x^3 - 2x^2 + 3x - 6)$

$= (x+1)[x^2(x-2) + 3(x-2)] =$

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

362 $x^5 + 9x^4 + 27x^3 + 27x^2 = x^2(x^3 + 9x^2 + 27x + 27) = x^2(x+3)^3$

363 $a^4 - a^2 + 24a = a(a^3 - a - 24)$

$P(3) = 1 + 27 + 3 - 24 = 0$

1	0	-1	-24
3	3	9	24
1	3	8	0

$= (a-3)(a^2 + 3a + 8) \cdot a^2$

Impossibile da scomporre come trinomio speciale

$\pm 1; \pm 2; \pm 4; \pm 8$ non sono Z/24

351 $1 + (x-y)^3 = [1 + (x-y)][1 - 1 \cdot (x-y) + (x-y)^2] =$
 $\downarrow \quad \downarrow$
 $1 \quad (x-y) = (1+x-y)(1-x+y+x^2+y^2-2xy)$

353 $ay^2 - 3aby + 2ab^2 = a(y^2 - 3by + 2b^2) = a(y-2b)(y-b)$

358 $\frac{1}{3}a^3 + \frac{1}{81}a^3b^3 = \frac{1}{3}a^3(1 + \frac{1}{27}b^3) = \frac{1}{3}a^3(1 + \frac{1}{3}b)(1 - \frac{1}{3}b + \frac{1}{9}b^2)$

384 $(2-x)^2 + 8 - x^3 = (2-x)^2 + (2-x)(4+2x+x^2) =$
 $= (2-x)[(2-x) + (4+2x+x^2)] = (2-x)(2-x+4+2x+x^2) =$
 $= (2-x)(x^2+x+6)$

$$376 \quad 1 - 9x^2 - 2^2 - 6 \times 2 = 1 - (9x^2 + 2^2 + 6 \times 2) = 1 - (3x+2)^2 =$$

$$= [1 + (3x+2)][1 - (3x+2)] = (1+3x+2)(1-3x-2)$$

$$377 \quad a^2 + 9b^2 - c^2 - 6ab = (a^2 + 9b^2 - 6ab) - c^2 = (a-3b)^2 - c^2 =$$

$$= [(a-3b)+c][(a-3b)-c] = (a-3b+c)(a-3b-c)$$

$$380 \quad 8x^3 - 4x^2 - 2x + 1 = 4x^2(2x-1) - (2x-1) = (2x-1)(4x^2-1) =$$

$$= (2x-1)(2x+1)(2x-1) = (2x-1)^2(2x+1)$$

$$372 \quad x^2 - t^2 + 4y^2 - 4xy = (x^2 + 4y^2 - 4xy) - t^2 = (x-2y)^2 - t^2 =$$

$$= [(x-2y)+t][(x-2y)-t] = (x-2y+t)(x-2y-t)$$

$$373 \quad 3by - 10b^2 + y^2 + (y-2b)^2 = (y^2 + 3by - 10b^2) + (y-2b)^2 =$$

$$= (y+5b)(y-2b) + (y-2b)^2 = (y-2b)[(y+5b) + (y-2b)] =$$

$$= (y-2b)(y+5b+y-2b) = (y-2b)(2y+3b)$$

$$332 \quad \begin{array}{ccccccc} a^2 & -4ab & +4b^2 & +9 & -6a & +12b & = (a-2b-3)^2 \\ \downarrow & & \downarrow & \downarrow & & & \\ a & & 2b & 3 & & & \end{array}$$

$$DP_1 = 2 \cdot a \cdot 2b = 4ab$$

$$DP_2 = 2 \cdot 3 \cdot a = 6a$$

$$DP_3 = 2 \cdot 2b \cdot 3 = 12b$$

$$333 \quad \frac{1}{4}x^2y^2z + \frac{25}{4}x^2z - \frac{5}{2}x^2yz = x^2z \left(\frac{1}{4}y^2 + \frac{25}{4} - \frac{5}{2}y \right) = x^2z \left(\frac{1}{2}y - \frac{5}{2} \right)^2$$

$$DP = \cancel{x^2} \cdot \frac{1}{2}y \cdot \frac{5}{2} = \frac{5}{2}y$$

$$= x^2z \left(\frac{1}{2}y - \frac{5}{2} \right) \left(\frac{1}{2}y - \frac{5}{2} \right) = x^2z \cdot \frac{1}{2}(y-5) \cdot \frac{1}{2}(y-5) = \frac{1}{4}x^2z(y-5)^2$$

$$336 \quad a^3b^3 + 25a^2b^7 - 10a^3b^5 = a^2b^3(a^6 + 25b^4 - 10a^3b^2) = a^2b^3(a^3 - 5b^2)^2$$

$$338 \quad \frac{1}{8}a^3b^3x^2 - 27x^2 = x^2 \left(\frac{1}{8}a^3b^3 - 27 \right) = x^2 \left(\frac{1}{2}ab - 3 \right) \left(\frac{1}{4}a^2b^2 + 3ab + 9 \right)$$

$$40 \quad y^3 - 2y^2 - 15y = y(y^2 - 2y - 15) = y(y-5)(y+3)$$