

**ISTITUTO DI ISTRUZIONE SUPERIORE "L. da Vinci" – Lanusei**  
**Matematica con Informatica**

**Classe 2B Liceo delle Scienze Umane**

**Scomposizione di polinomi**

$$1) 32a^2 + 50b^2 - 80ab = 2(16a^2 + 25b^2 - 40ab) = 2(4a - 5b)^2$$

$\downarrow$                        $\downarrow$                        $\swarrow$   
 $(4a)^2$      $(5b)^2$      $2 \cdot 4a \cdot 5b = 40ab$

$$2) \underline{5x} + \underline{5y} + \underline{bx} + \underline{by} = 5(x+y) + b(x+y) = (x+y)(5+b)$$

$$3) x^3 - 5x^2 + 2x + 8 = (x+1)(x^2 - 6x + 8) = (x+1)(x-4)(x-2)$$

$\pm 1, \pm 2, \pm 4, \pm 8$

1	-5	2	8
-1	-1	6	-8
1	-6	8	//

$$4) x^3 - 6x^2 + 12x - 8 = (x-2)^3$$

$\downarrow$                        $\swarrow$                        $\downarrow$   
 $(x)^3$      $3x^2 \cdot (-2) = -6x^2$      $(-2)^3$   
 $3x \cdot (-2)^2 = 3x \cdot 4 = 12x$

$$5) a^2b + 12ab + 32b = b(a^2 + 12a + 32) = b(a+4)(a+8)$$

$$6) a^5x^3 + a^2 = a^2(a^3x^3 + 1) = a^2[(ax)^3 + 1^3] = a^2(ax+1)(a^2x^2 - ax + 1)$$

$$7) 3e^3 - 48e = 3e(e^2 - 16) = 3e(e-4)(e+4)$$

$$8) \underline{2x} - \underline{2} + \underline{bx} - \underline{b} = 2(x-1)$$

$$9) 2x^2 - 5x - 3 = (x-3)(2x+1)$$

$\pm 1, \pm 3$   
 $\pm 1, \pm 2$   
 $\pm 1, \pm \frac{1}{2}, \pm 3, \pm \frac{3}{2}$

2	-5	-3
3	6	3
2	1	//

$$10) x^2 - 11x + 28 = (x-4)(x-7)$$

$$11) x^2y^2 + a^2 + 2axy = (xy+a)^2$$

$\downarrow$                        $\downarrow$                        $\swarrow$   
 $(xy)^2$      $(a)^2$      $2xya = 2axy$

①

$$\begin{aligned} & \left( \frac{2}{5} + \frac{7}{9} - \frac{3}{20} \right) \cdot \frac{6}{5} - \frac{5}{6} \\ & \left( \frac{1}{9} + \frac{5}{18} + \frac{19}{9} \cdot \frac{2}{5} \right) - \frac{2}{5} \cdot \frac{3}{2} \\ & = \frac{72 + 140 - 27}{180} \cdot \frac{6}{5} - \frac{5}{6} = \frac{\overset{37}{\cancel{185}} \cdot \overset{1}{\cancel{6}} - \frac{5}{6}}{\cancel{180}_{30}} = \left( \frac{2}{5} + \frac{38}{15} \right) - \frac{4}{15} \\ & = \frac{\frac{37}{30} - \frac{5}{6}}{\frac{6+38}{15} - \frac{4}{15}} = \frac{\frac{37-25}{30}}{\frac{44}{15} - \frac{4}{15}} = \frac{\frac{\cancel{12}^2}{\cancel{30}_6} \cdot \frac{1}{6}}{\frac{40}{15} - \frac{4}{15}} = \frac{2}{6} \cdot \frac{\overset{3}{\cancel{15}}}{\cancel{40}_{20}} = \frac{3}{20} \end{aligned}$$

②

a)  $21 = 3 \cdot 7$  ,  $15 = 3 \cdot 5$  ,  $10 = 2 \cdot 5$   
M.C.D. (21, 15, 10) = 3  
m.c.m. (21, 15, 10) =  $2 \cdot 3 \cdot 5 \cdot 7 = 210$

b)  $12 = 3 \cdot 2^2$  ;  $16 = 2^4$  ;  $36 = 2^2 \cdot 3^2$   
M.C.D. (12, 16, 36) =  $2^2$   
m.c.m. (12, 16, 36) =  $3^2 \cdot 2^4 = 9 \cdot 16 = 144$