

1. $30 a^3 b^2 - 35 a^2 b^3 = 5a^2 b^2 (6a - 7b)$
2. $bx - 2x + 2 - b = x(b - 2) - 1(b - 2) = (b - 2)(x - 1)$
3. $64 x^3 + 27 = (4x + 3)(16x^2 - 12x + 9)$
4. $x^2 + 12x - 13 = (x + 13)(x - 1)$
5. $9 - 4y^2 = (3 - 2y)(3 + 2y)$
6. $125 - 150y - 8y^3 + 60y^2 = (5 - 2y)^3$
7. $15a^2 - 6ab + 10a - 4b = 3a(5a - 2b) + 2(5a - 2b) = (5a - 2b)(3a + 2)$
8. $\frac{y^3}{8} + 1 + \frac{3}{4} y^2 + \frac{3}{2} y = \left(\frac{y}{2} + 1\right)^3$
9. $\frac{x^2}{9} + \frac{1}{4} - \frac{1}{3} x = \left(\frac{x}{3} - \frac{1}{2}\right)^2$
10. $a^2 + b^2 + 4c^2 + 2ab - 4ac - 4bc = (a + b - 2c)^2$
11. $\frac{16}{9} a^2 b^2 + \frac{9}{16} + 2ab = \left(\frac{4}{3} ab + \frac{3}{4}\right)^2$
12. $3b^2 - b - 10 = 3b^2 + 5b - 6b - 10 = b(3b + 5) - 2(3b + 5) = (3b + 5)(b - 2)$
13. $16x - 12x^2 + 16 = -4(3x^2 - 4x - 4) = -4(3x^2 - 6x + 2x - 4) = -4[3x(x - 2) + 2x - 2] = -4x - 2(3x + 2)$
14. $2a^4 + 2a^3 - 12a^2 = 2a^2(a^2 + a - 6) = 2a^2(a + 3)(a - 2)$
15. $\frac{1}{3} x^2 + \frac{2}{9} xy + \frac{1}{27} y^2 = \frac{1}{3} \left(x^2 + \frac{2}{3} xy + \frac{1}{9} y^2\right) = \frac{1}{3} \left(x + \frac{1}{3} y\right)^2$
16. $x^6 - 16x^3 + 64 = (x^3 - 8)^2 = (x - 2)^2(x^2 + 2x + 4)^2$
17. $x^3 - x^2 y - x + y = x^2(x - y) - (x - y) = (x - y)(x^2 - 1) = (x - y)(x - 1)(x + 1)$
18. $x^4 - y^4 = (x^2 - y^2)(x^2 + y^2) = (x - y)(x + y)(x^2 + y^2)$
19. $4a^2 b^4 - 6ab^2 + 6a^2 b - 4a^3 b^3 = 2ab(2ab^3 - 3b + 3a - 2a^2 b^2) = 2ab(2ab^2 b - a - 3b - a) = 2abb - a(2ab^2 - 3)$
20. $(x + y)(x^2 - 2) - (x + y)(x^2 + 2) = (x + y)(x^2 - 2 - x^2 - 2) = -4(x + y)$
21. $a^4 - 10a^2 + 9 = (a^2 - 9)(a^2 - 1) = (a + 3)(a - 3)(a + 1)(a - 1)$
22. $x^8 + 3x^6 - x^4 - 3x^2 = x^2(x^6 + 3x^4 - x^2 - 3) = x^2[x^4(x^2 + 3) - 1(x^2 + 3)] = x^2(x^2 + 3)(x^4 - 1) = x^2(x^2 + 3)(x^2 - 1)(x^2 + 1) = x^2(x^2 + 3)(x^2 + 1)(x - 1)(x + 1)$
23. $3x^4 + 4x^3 - 17x^2 - 6x = x(3x^3 + 4x^2 - 17x - 6)$
Applichiamo la regola di Ruffini
 $xx - 23x^2 + 10x + 3 = xx - 23x^2 + 9x + x + 3 = x(x - 2)[3x(x + 3) + 1(x + 3)] = x(x - 2)(33x + 1)$
24. $x^6 + 9x^3 + 8 = (x^3 + 1)(x^3 + 8) = (x + 1)(x^2 - x + 1)(x + 2)(x^2 - 2x + 4)$
25. $a^2 b + 9ab^2 + 20b^3 = b(a^2 + 9ab + 20b^2) = b(a + 5b)(a + 4b)$
26. $3a^2 b + 3ab^2 = 3ab(a + b);$
 $6b^3 + 6ab^2 = 6b^2(a + b);$
 $2a^3 b + 2a^2 b^2 = 2a^2 b(a + b)$
M. C. D. = $ab(a + b)$
m. c. m. = $6a^2 b^2(a + b)$
27. $x^2 - 3x = x(x - 3);$
 $x^2 - 6x + 9 = (x - 3)^2;$
 $3x - 9 = 3(x - 3)$
M. C. D. = $(x - 3)$
m. c. m. = $3x(x - 3)^2$
28. $3x - 3y = 3(x - y);$
 $x^2 - y^2 = (x + y)(x - y);$
 $x^2 + y^2 - 2xy = (x - y)^2$
M. C. D. = $(x - y)$
m. c. m. = $3(x - y)^2(x + y)$