1. $30\,a^2b^3 - 25\,a^3b^2 = \mathbf{5a^2b^2(6b - 5a)}$

2. $bx - ax + a - b = x(b - a) - 1(b - a) =$ $\mathbf{(b - a)(x - 1)}$

3. $27\,x^3 + 64 = \mathbf{(3x + 4)(9x^2 - 12x + 16)}$

4. $x^2 - 12x - 13 = \mathbf{(x - 13)(x + 1)}$

5. $9\,y^2 - 4 = \mathbf{(3y - 2)(3y + 2)}$

6. $8 - 60y - 125y^3 + 150y^2 = \mathbf{(2 - 5y)^3}$

7. $10a^2 - 4ab + 15a - 6b = 2a(5a - 2b) +$ $3(5a - 2b) = \mathbf{(5a - 2b)(2a + 3)}$

8. $\frac{y^3}{8} - 1 - \frac{3}{4}\,y^2 + \frac{3}{2}\,y = \mathbf{\left(\frac{y}{2} - 1\right)^3}$

9. $\frac{x^2}{4} + \frac{1}{9} - \frac{1}{3}\,x = \mathbf{\left(\frac{x}{2} - \frac{1}{3}\right)^2}$

10. $a^2 + b^2 + 4\,c^2 - 2ab - 4ac + 4bc = \mathbf{(a - b - 2c)^2}$

11. $\frac{9}{16}\,a^2b^2 + \frac{16}{9} + 2ab = \mathbf{\left(\frac{3}{4}ab + \frac{4}{3}\right)^2}$

12. $3b^2 + b - 10 = 3b^2 - 5b + 6b - 10 = b(3b - 5) +$ $2(3b - 5) = \mathbf{(3b - 5)(b + 2)}$

13. $32x - 12x^2 - 16 = -4(3x^2 - 8x + 4) =$ $-4(3x^2 - 6x - 2x + 4) = -4[3x(x - 2) -$ $2x-2=\mathbf{-4x-2(3x-2)}$

14. $2a^4 - 2a^3 - 12a^2 = 2a^2(a^2 - a - 6) =$ $\mathbf{2a^2(a - 3)(a + 2)}$

15. $\frac{1}{3}\,x^2 - \frac{2}{9}\,xy + \frac{1}{27}\,y^2 = \frac{1}{3}\left(x^2 - \frac{2}{3}\,xy + \frac{1}{9}\,y^2\right) =$ $\mathbf{\frac{1}{3}\left(x - \frac{1}{3}\,y\right)^2}$

16. $x^6 + 16x^3 + 64 = (x^3 + 8)^2 =$ $\mathbf{(x + 2)^2(x^2 - 2x + 4)^2}$

17. $x^3 + x^2y - x - y = x^2(x + y) - (x + y) =$ $(x + y)(x^2 - 1) = \mathbf{(x + y)(x - 1)(x + 1)}$

18. $x^4 - y^4 = (x^2 - y^2)(x^2 + y^2) =$ $\mathbf{(x - y)(x + y)(x^2 + y^2)}$

19. $6a^2b^4 - 4ab^2 + 4a^2b - 6a^3b^3 = 2ab(3ab^3 - 2b +$ $2a-3a2b2=2ab3ab2b-a-2b-a=\mathbf{2abb-a(3ab2-2)}$

20. $(x + y)(x^2 - 1) - (x + y)(x^2 + 1) = (x + y)(x^2 -$ $1-x2-1=\mathbf{-2(x+y)}$

21. $a^4 - 5\,a^2 + 4 = (a^2 - 4)(a^2 - 1) =$ $\mathbf{(a + 2)(a - 2)(a + 1)(a - 1)}$

22. $x^8 + 2x^6 - x^4 - 2x^2 = x^2(x^6 + 2x^4 - x^2 - 2) =$ $x^2[x^4(x^2 + 2) - 1(x^2 + 2)] = x^2(x^2 + 2)(x^4 - 1) =$ $x^2(x^2 + 2)(x^2 - 1)(x^2 + 1) =$ $\mathbf{x^2(x^2 + 2)(x^2 + 1)(x - 1)(x + 1)}$

23. $3x^4 - 4x^3 - 17x^2 + 6x = x(3x^3 - 4x^2 - 17x +$ $6=Applichiamo\ la\ regola\ di\ Ruffini=xx+23x2-10x+3=xx+23x2-9x-x+3=x$ $(x + 2)[3x(x - 3) - 1(x - 3)] = \mathbf{x(x + 2)(x -}$ $\mathbf{33x-1}$

24. $x^6 - 9\,x^3 + 8 = (x^3 - 1)(x^3 - 8) =$ $\mathbf{(x - 1)(x^2 + x + 1)(x - 2)(x^2 + 2x + 4)}$

25. $a^2b - 9ab^2 + 20b^3 = b(a^2 - 9ab + 20b^2) =$ $\mathbf{b(a - 5b)(a - 4b)}$

26. $3a^2b + 3ab^2 = 3ab(a + b);$ $6a^3 + 6a^2b = 6a^2(a + b);$ $2a^2b^2 + 2ab^3 = 2ab^2(a + b)$ $\mathbf{M.C.D. = a(a + b)}$ $\mathbf{m.c.m. = 6a^2b^2(a + b)}$

27. $2x^2 - x = x(2x - 1);$ $4x^2 - 4x + 1 = (2x - 1)^2;$ $6x - 3 = 3(2x - 1)$ $\mathbf{M.C.D. = (2x - 1)}$ $\mathbf{m.c.m. = 3x(2x - 1)^2}$

28. $2x + 2y = 2(x + y);$ $x^2 - y^2 = (x + y)(x - y);$ $x^2 + y^2 + 2xy = (x + y)^2$ $\mathbf{M.C.D. = (x + y)}$ $\mathbf{m.c.m. = 2(x + y)^2(x - y)}$