

Esercizi sui prodotti notevoli

Somma per differenza

1. $(a^4 + 3)(a^4 - 3) =$ $[a^8 - 9]$
2. $(x^2y + 4)(x^2y - 4) =$ $[x^4y^2 - 16]$
3. $(3bc^3 - 4a)(3bc^3 + 4a) =$ $[9b^2c^6 - 16a^2]$
4. $(5x + 6y^2)(5x - 6y^2) =$ $[25x^2 - 36y^4]$
5. $\left(\frac{1}{2}a + 4\right)\left(\frac{1}{2}a - 4\right) =$ $\left[\frac{1}{4}a^2 - 16\right]$
6. $\left(\frac{1}{3}x^2 + y^3\right)\left(\frac{1}{3}x^2 - y^3\right) =$ $\left[\frac{1}{9}x^4 - y^6\right]$
7. $\left(\frac{2}{3}ab^2 + \frac{1}{4}c\right)\left(\frac{2}{3}ab^2 - \frac{1}{4}c\right) =$ $\left[\frac{4}{9}a^2b^4 - \frac{1}{16}c^2\right]$
8. $\left(\frac{5}{2}a^2 + b^2c^5\right)\left(\frac{5}{2}a^2 - b^2c^5\right) =$ $\left[\frac{25}{4}a^4 - b^4c^{10}\right]$
9. $\left(\frac{7}{3}x^6yz + 9\right)\left(\frac{7}{3}x^6yz - 9\right) =$ $\left[\frac{49}{9}x^{12}y^2z^2 - 81\right]$
10. $(12x^4 + 8y^9)(12x^4 - 8y^9) =$ $[144x^8 - 64y^{18}]$

Quadrato di un binomio

11. $(3x^3 + 5)^2 =$ $[9x^6 + 30x^3 + 25]$
12. $(a^2b - 4c^3)^2 =$ $[a^4b^2 - 8a^2bc^3 + 16c^6]$
13. $\left(5y^4 + \frac{1}{3}\right)^2 =$ $\left[25y^8 + \frac{10}{3}y^4 + \frac{1}{9}\right]$
14. $(4c^5 - 10)^2 =$ $[16c^{10} - 80c^5 + 100]$
15. $\left(\frac{1}{3}a^3 + \frac{2}{3}\right)^2 =$ $\left[\frac{1}{9}a^6 + \frac{4}{9}a^3 + \frac{4}{9}\right]$
16. $\left(7x^4 + \frac{1}{2}y\right)^2 =$ $\left[49x^8 + 7x^4y + \frac{1}{4}y^2\right]$
17. $\left(\frac{3}{4}x^6y^2 - 4\right)^2 =$ $\left[\frac{9}{16}x^{12}y^4 - 6x^6y^2 + 16\right]$
18. $\left(\frac{2}{3}a^5 + \frac{3}{4}ab^3\right)^2 =$ $\left[\frac{4}{9}a^{10} + a^6b^3 + \frac{9}{16}a^2b^6\right]$
19. $\left(\frac{6}{5}x^2z - \frac{5}{12}xy\right)^2 =$ $\left[\frac{36}{25}x^4z^2 - x^3yz + \frac{25}{144}x^2y^2\right]$
20. $\left(11a^4 + \frac{7}{22}a^2b\right)^2 =$ $\left[121a^8 + 7a^6b + \frac{49}{484}a^4b^2\right]$

Quadrato di un trinomio

21. $(2x^2 + y^3 + 6)^2 = [4x^4 + y^6 + 36 + 4x^2y^3 + 12y^3 + 24x^2]$
22. $(a^3 + 5ab - 4)^2 = [a^6 + 25a^2b^2 + 16 + 10a^4b - 40ab - 8a^3]$
23. $(xy^4 + 2x - 5y^2)^2 = [x^2y^8 + 4x^2 + 25y^4 + 4x^2y^4 - 20xy^2 - 10xy^6]$
24. $(2xy^2 - \frac{1}{2}x - 4y)^2 = [4x^2y^4 + \frac{1}{4}x^2 + 16y^2 - 2x^2y^2 + 4xy - 16xy^3]$
25. $(\frac{3}{2}a^2 + b^4 + \frac{4}{3})^2 = [\frac{9}{4}a^4 + b^8 + \frac{16}{9} + 3a^2b^4 + \frac{8}{3}b^4 + 4a^2]$
26. $(\frac{5}{2}x^6 - y^8 + \frac{1}{2}z^4)^2 = [\frac{25}{4}x^{12} + y^{16} + \frac{1}{4}z^8 - 5x^6y^8 - y^8z^4 + \frac{5}{2}x^6z^4]$
27. $(\frac{1}{4}a^{10}b^8 - \frac{3}{2}a^5 - 8)^2 = [\frac{1}{16}a^{20}b^{16} + \frac{9}{4}a^{10} + 64 - \frac{3}{4}a^{15}b^8 + 24a^5 - 4a^{10}b^8]$
28. $(\frac{2}{7}x^2y + 7xy^3 + \frac{3}{2}x^4y^2)^2 = [\frac{4}{49}x^4y^2 + 49x^2y^6 + \frac{9}{4}x^8y^4 + 4x^3y^4 + 21x^5y^5 + \frac{6}{7}x^6y^3]$
29. $(a^6b^9 - 3a^{12} - \frac{5}{3}b^5)^2 = [a^{12}b^{18} + 9a^{24} + \frac{25}{9}b^{10} - 6a^{18}b^9 + 10a^{12}b^5 - \frac{10}{3}a^6b^{14}]$
30. $(-x^{15} - \frac{5}{2}y^{12} - z^{22})^2 = [x^{30} + \frac{25}{4}y^{24} + z^{44} + 5x^{15}y^{12} + 5y^{12}z^{22} + 2x^{15}z^{22}]$

Cubo di un binomio

31. $(2x + 5)^3 = [8x^3 + 60x^2 + 150x + 125]$
32. $(a^4 - 4a)^3 = [a^{12} - 12a^9 + 48a^6 - 64a^3]$
33. $(2y + \frac{1}{3})^3 = [8y^3 + 4y^2 + \frac{2}{3}y + \frac{1}{27}]$
34. $(3a^3b - 2b^2)^3 = [27a^9b^3 - 54a^6b^4 + 36a^3b^5 - 8b^6]$
35. $(\frac{2}{3}x^5 + 6y^4)^3 = [\frac{8}{27}x^{15} + 8x^{10}y^4 + 72x^5y^8 + 216y^{12}]$
36. $(\frac{1}{3}m^2 - \frac{1}{2}mn)^3 = [\frac{1}{27}m^6 - \frac{1}{6}m^5n + \frac{1}{4}m^4n^2 - \frac{1}{8}m^3n^3]$
37. $(x^{10}y^8 - z^{12})^3 = [x^{30}y^{24} - 3x^{20}y^{16}z^{12} + 3x^{10}y^8z^{24} - z^{36}]$
38. $(-3ab + \frac{1}{3}a^3b^4)^3 = [-27a^3b^3 + 9a^5b^6 - a^7b^9 + \frac{1}{27}a^9b^{12}]$
39. $(-2x^6y^5 - 3z^7)^3 = [-8x^{18}y^{15} - 36x^{12}y^{10}z^7 - 54x^6y^5z^{14} - 27z^{21}]$
40. $(-4a^{12}b^{10} + \frac{2}{3}a^4b^8)^3 = [-64a^{36}b^{30} + 32a^{28}b^{28} - \frac{16}{3}a^{20}b^{26} + \frac{8}{27}a^{12}b^{24}]$