

Esercizi sui prodotti notevoli

Somma per differenza

1. $(4x^3y + 9)(4x^3y - 9) =$ $[16x^6y^2 - 81]$
2. $(5a^6b^4 + 4c^2)(5a^6b^4 - 4c^2) =$ $[25a^{12}b^8 - 16c^4]$
3. $(6m^9n^3 - 10x)(6m^9n^3 + 10x) =$ $[36m^{18}n^6 - 100x^2]$
4. $\left(\frac{5}{4}a^6 + \frac{6}{11}b^9\right)\left(\frac{5}{4}a^6 - \frac{6}{11}b^9\right) =$ $\left[\frac{25}{16}a^{12} - \frac{36}{121}b^{18}\right]$
5. $\left(\frac{1}{8}x^{10} + \frac{7}{5}y^{11}\right)\left(\frac{1}{8}x^{10} - \frac{7}{5}y^{11}\right) =$ $\left[\frac{1}{64}x^{20} - \frac{49}{25}y^{22}\right]$
6. $\left(\frac{1}{13}a^8b^5 + 11c^{12}\right)\left(\frac{1}{13}a^8b^5 - 11c^{12}\right) =$ $\left[\frac{1}{169}a^{16}b^{10} - 121c^{24}\right]$
7. $\left(\frac{12}{7}xy^2z + \frac{1}{9}\right)\left(\frac{12}{7}xy^2z - \frac{1}{9}\right) =$ $\left[\frac{144}{49}x^2y^4z^2 - \frac{1}{81}\right]$
8. $\left(\frac{a^4b^2}{9} - 13c^8\right)\left(\frac{a^4b^2}{9} + 13c^8\right) =$ $\left[\frac{a^8b^4}{81} - 169c^{16}\right]$
9. $\left(\frac{15}{8}x^{16}y^{25} - \frac{z^{14}}{16}\right)\left(\frac{15}{8}x^{16}y^{25} + \frac{z^{14}}{16}\right) =$ $\left[\frac{225}{64}x^{32}y^{50} - \frac{z^{28}}{256}\right]$
10. $\left(20x^{64} + \frac{18y^{39}}{z^{45}}\right)\left(20x^{64} - \frac{18y^{39}}{z^{45}}\right) =$ $\left[400x^{128} - \frac{324y^{78}}{z^{90}}\right]$

Quadrato di un binomio

11. $(3a^8 + 6b^3)^2 =$ $[9a^{16} + 36a^8b^3 + 36b^6]$
12. $\left(\frac{3}{4}m^4n^3 - 8x^6\right)^2 =$ $\left[\frac{9}{16}m^8n^6 - 12m^4n^3x^6 + 64x^{12}\right]$
13. $\left(7a^4b^8 + \frac{1}{3}b^2\right)^2 =$ $\left[49a^8b^{16} + \frac{14}{3}a^4b^{10} + \frac{1}{9}b^4\right]$
14. $(-11x^5 - 8y)^2 =$ $[121x^{10} + 176x^5y + 64y^2]$
15. $\left(-\frac{1}{4}a^{12} + \frac{4}{5}b^{10}c^8\right)^2 =$ $\left[\frac{1}{16}a^{24} - \frac{2}{5}a^{12}b^{10}c^8 + \frac{16}{25}b^{20}c^{16}\right]$
16. $\left(-5a^6 - \frac{3}{4}b^6\right)^2 =$ $\left[25a^{12} + \frac{15}{2}a^6b^6 + \frac{9}{16}b^{12}\right]$
17. $\left(\frac{a^8b^4c^2}{9} - 4a^{10}b^2\right)^2 =$ $\left[\frac{a^{16}b^8c^4}{81} - \frac{8}{9}a^{18}b^6c^2 + 16a^{20}b^4\right]$
18. $\left(-\frac{8}{7}m^{15}n^{12} + \frac{7}{16}mn^8\right)^2 =$ $\left[\frac{64}{49}m^{30}n^{24} - m^{16}n^{20} + \frac{49}{256}a^2b^6\right]$
19. $\left(\frac{b^{12}c^{22}}{3} - \frac{b^{15}c^{19}}{8}\right)^2 =$ $\left[\frac{b^{24}c^{44}}{9} - \frac{b^{27}c^{41}}{12} + \frac{b^{30}c^{38}}{64}\right]$
20. $\left(-8m^{14}n^{16} + \frac{5}{16}n^{32}o^{29}\right)^2 =$ $\left[64m^{28}n^{32} - 5m^{14}n^{48}o^{29} + \frac{25}{256}n^{64}o^{58}\right]$

Quadrato di un trinomio

21. $(3a^4b + 2a^2 + 5)^2 = [9a^8b^2 + 4a^4 + 25 + 12a^6b + 20a^2 + 30a^4b]$
22. $(-4x^3y + 2xy^3 - 1)^2 = [16x^6y^2 + 4x^2y^6 + 1 - 16x^4y^4 - 4xy^3 + 8x^3y]$
23. $(2x^5 + 3y^4 - 6z^3)^2 = [4x^{10} + 9y^8 + 36z^6 + 12x^5y^4 - 36y^4z^3 - 24x^5z^3]$
24. $(4a^4b^3 - \frac{1}{3}c^5 - 5)^2 = [16a^8b^6 + \frac{1}{9}c^{10} + 25 - \frac{8}{3}a^4b^3c^5 + \frac{10}{3}c^5 - 40a^4b^3]$
25. $(\frac{4}{3}a^6 + 3b^8 + \frac{3}{8}ab)^2 = [\frac{16}{9}a^{12} + 9b^{16} + \frac{9}{64}a^2b^2 + 8a^6b^8 + \frac{9}{4}ab^9 + a^7b]$
26. $(\frac{5}{4}a^8 - 2b^{10} + \frac{2}{5}x^9y^6)^2 = [\frac{25}{16}a^{16} + 4b^{20} + \frac{4}{25}x^{18}y^{12} - 5a^8b^{10} - \frac{8}{5}b^{10}x^9y^6 + a^8x^9y^6]$
27. $(\frac{x^{15}y^{18}}{5} - \frac{2}{7}x^5 - 7y^9)^2 = [\frac{x^{30}y^{36}}{25} + \frac{4}{49}x^{10} + 49y^{18} - \frac{4}{35}x^{20}y^{18} + 4x^5y^9 - \frac{14}{5}x^{15}y^{27}]$
28. $(\frac{2a^{20}b^{28}}{7} - 7c^{25} - 12)^2 = [\frac{4a^{40}b^{56}}{49} + 49c^{50} + 144 - 4a^{20}b^{28}c^{25} + 168c^{25} - \frac{48a^{20}b^{28}}{7}]$
29. $(-4x^{16}y^{19} - 5x^{22} - y^{15})^2 = [16x^{32}y^{38} + 25x^{44} + y^{30} + 40x^{38}y^{19} + 10x^{22}y^{15} + 8x^{16}y^{34}]$
30. $(-7a^{45} - 4a^{52} - 2a^{38})^2 = [65a^{90} + 16a^{104} + 4a^{76} + 56a^{97} + 28a^{83}]$

Cubo di un binomio

31. $(3x^2 + 4y)^3 = [27x^6 + 108x^4y + 144x^2y^2 + 64y^3]$
32. $(2x^6 - y^{10})^3 = [8x^{18} - 12x^{12}y^{10} + 6x^6y^{20} - y^{30}]$
33. $(-3a^4 - 5b^5)^3 = [-27a^{12} - 135a^8b^5 - 225a^4b^{10} - 125b^{15}]$
34. $(4x^6 - \frac{2}{9}y^8)^3 = [64x^{18} - \frac{32}{3}x^{12}y^8 + \frac{16}{27}x^6y^{16} - \frac{8}{729}y^{24}]$
35. $(-\frac{3}{5}a^{15} - \frac{5}{6}b^{14})^3 = [-\frac{27}{125}a^{45} - \frac{9}{10}a^{30}b^{14} - \frac{5}{4}a^{15}b^{28} - \frac{125}{216}b^{42}]$
36. $(x^{29}y^{34} - y^{42})^3 = [x^{87}y^{102} - 3x^{58}y^{110} + 3x^{29}y^{118} - y^{126}]$
37. $(-5a^{40}b^{48} - \frac{1}{5}c^{52})^3 = [-125a^{120}b^{144} - 15a^{80}b^{96}c^{52} - \frac{3}{5}a^{40}b^{48}c^{104} - \frac{1}{125}c^{156}]$
38. $(-\frac{4}{5}a^{12}b^{41}c^{16} + \frac{5}{2})^3 = [-\frac{64}{125}a^{36}b^{123}c^{48} + \frac{24}{5}a^{24}b^{82}c^{32} - 15a^{12}b^{41}c^{16} + \frac{125}{8}]$
39. $(-9x^{56}y^{55} - 8z^{57})^3 = [-729x^{168}y^{165} - 1944x^{112}y^{110}z^{57} - 1728x^{56}y^{55}z^{114} - 512z^{171}]$
40. $(\frac{a^{112}b^{130}}{3} + \frac{a^{49}b^{81}}{4})^3 = [\frac{a^{336}b^{390}}{27} + \frac{a^{273}b^{341}}{12} + \frac{a^{210}b^{292}}{16} + \frac{a^{147}b^{243}}{64}]$