

Quozienti notevoli

In ciascuna delle divisioni proposte individuare il monomio mancante affinché il quoziente sia esatto e scrivere il risultato.

$$1) \quad (x^3 - 8y^6) : (x - \dots) \qquad (x^3 - 8y^6) : (x - 2y^2) = x^2 + 2xy^2 + 4y^4$$

$$2) \quad (4x^2 - y^4) : (2x + \dots) \qquad (4x^2 - y^4) : (2x + y^2) = 2x - y^2$$

$$\text{oppure} \qquad (4x^2 - y^4) : (2x + (-y^2)) = 2x + y^2$$

$$3) \quad (9x^4 - y^2) : (-3x^2 + \dots) \qquad (9x^4 - y^2) : (-3x^2 + y) = ((-3x^2)^2 - y^2) : (-3x^2 + y) = -3x^2 - y$$

$$\text{oppure} \qquad (9x^4 - y^2) : (-3x^2 + (-y)) = ((-3x^2)^2 - (-y)^2) : (-3x^2 + (-y)) = -3x^2 + y$$

$$4) \quad \left(\frac{1}{8}x^6 + 27\right) : \left(\frac{1}{2}x^2 + \dots\right) \qquad \left(\frac{1}{8}x^6 + 27\right) : \left(\frac{1}{2}x^2 + 3\right) = \frac{1}{4}x^4 - \frac{3}{2}x^2 + 9$$

$$5) \quad (x^9 + 8y^3) : (x^3 + \dots) \qquad (x^9 + 8y^3) : (x^3 + 2y) = x^6 - 2x^3y + 4y^2$$

$$6) \quad (a^3x^{12} + y^{15}) : (\dots + y^5) \qquad (a^3x^{12} + y^{15}) : (ax^4 + y^5) = a^2x^8 - ax^4y^5 + y^{10}$$

$$7) \quad (x^9 - 27y^6) : (x^3 + \dots) \qquad (x^9 - 27y^6) : (x^3 - 3y^2) = x^6 + 3x^3y^2 + 9y^4$$

$$8) \quad (10^{-3}x^6 - 1000y^3) : (\dots - 10y) \qquad (10^{-3}x^6 - 10^3y^3) : (10^{-1}x^2 - 10y) = 10^{-2}x^4 + x^2y + 10^2y^2$$

$$9) \quad (a^{3n}b^3 - 10^{6n}) : (a^n b - \dots) \qquad (a^{3n}b^3 - 10^{6n}) : (a^n b - 10^{2n}) = a^{2n}b^2 + 10^{2n}a^n b + 10^{4n}$$

$$10) \quad (4a^2y^4 - 0,25z^2) : (2ay^2 - \dots) \qquad ((2ay^2)^2 - (0,5z)^2) : (2ay^2 - 0,5z) = 2ay^2 + 0,5z$$

$$\text{oppure} \qquad ((2ay^2)^2 - (-0,5z)^2) : (2ay^2 - (-0,5z)) = (2ay^2 - 0,5z)$$

$$11) \quad (x^4 - 0,01y^2) : (x^2 - \dots) \qquad (x^4 - 0,01y^2) : (x^2 - 0,1y) = x^2 + 0,1y, \text{ oppure}$$

$$(x^4 - 0,01y^2) : (x^2 - (-0,1y)) = x^2 - 0,1y$$

$$12) \quad (10^{-3}x^{15} - 1) : (\dots - 1) \qquad (10^{-3}x^{15} - 1) : (10^{-1}x^5 - 1) = 10^{-2}x^{10} + 10^{-1}x^5 + 1$$

$$13) \quad (10^{3n}x^{6n} + 1) : (\dots + 1) \qquad ((10^n x^{2n})^3 + 1) : (10^n x^{2n} + 1) = 10^{2n}x^{4n} - 10^n x^{2n} + 1$$

oppure, considerando $((10^3 x^6)^n + 1) : (10^3 x^6 + 1)$, solo con n dispari. Si tralascia ...

$$14) \quad (100000x^{10} - 1) : (\dots - 1) \qquad (100000x^{10} - 1) : (10x^2 - 1) = ((10x^2)^5 - 1) : (10x^2 - 1) =$$

$$10^4 x^8 + 10^3 x^6 + 10^2 x^4 + 10x^2 + 1$$

$$15) \quad (x^{3n} - 27y^{12}) : (x^n - \dots) \qquad (x^{3n} - 27y^{12}) : (x^n - 3y^4) = x^{2n} + 3x^n y^4 + 9y^8$$

$$16) \quad (3^{12} - 5^9) : (81 - \dots) \qquad (3^{12} - 5^9) : (81 - 5^3) = \left((3^4)^3 - (5^3)^3 \right) : (3^4 - 5^3) =$$
$$3^8 + 3^4 \cdot 5^3 + 5^6 = 32.311$$

$$17) \quad (1000 \cdot 5^6 + 8 \cdot 7^9) : (10 \cdot 5^2 + \dots) \quad (1000 \cdot 5^6 + 8 \cdot 7^9) : (10 \cdot 5^2 + 2 \cdot 7^3) =$$
$$\left((10 \cdot 5^2)^3 + (2 \cdot 7^3)^3 \right) : (10 \cdot 5^2 + 2 \cdot 7^3) = 10^2 \cdot 5^4 - 10 \cdot 5^2 \cdot 2 \cdot 7^3 + 2^2 \cdot 7^6 = 361.596$$

$$18) \quad (64 \cdot 5^6 - 27 \cdot 343) : (\dots - 21) \qquad (4^3 \cdot 5^6 - 3^3 \cdot 7^3) : (4 \cdot 5^2 - 21) = 100^2 + 100 \cdot 21 + 21^2 = 12.541$$