

Mocniny s přirozeným exponentem

Zadání

1) $2x^2 \cdot 5x^4 =$

2) $5a^3 \cdot 2b^4 \cdot 4a^2 =$

3) $2x^2y^4z^2 \cdot 5xy^3 \cdot 6xz^3 =$

4) $m^8 : m^3 =$

5) $(a^5)^2 : a^3 =$

6) $\frac{a^6 \cdot b^3}{a^2 \cdot b^9} =$

7) $\frac{x^9 \cdot y^5}{x^4 \cdot y^3} =$

8) $\frac{a^5 \cdot b^3}{a^9 \cdot b^7} =$

9) $\frac{15a^5b^2}{12a^3b^5} =$

10) $\frac{24x^5y^3}{18x^9y^5} =$

11) $(y^2)^4 =$

12) $(a^2b^3)^4 =$

13) $(2x^2)^4 =$

14) $(3a^5b^4)^3 =$

15) $\left(\frac{u^2}{v^3}\right)^4 =$

16) $\left(\frac{2a^6}{3b^7}\right)^4 =$

17) $\frac{a^2b}{c} : \frac{c^2}{ab^2} =$

18) $(x^2y^3)^2 xy =$

19) $(a^2)^3 : \frac{1}{a^5} =$

20) $(x^3y^4)^5 : (x^4y^3) =$

Řešení

- 1) $2x^2 \cdot 5x^4 = 2 \cdot 5 \cdot x^2 \cdot x^4 = 10x^6$
- 2) $5a^3 \cdot 2b^4 \cdot 4a^2 = 5 \cdot 2 \cdot 4 \cdot a^3 \cdot a^2 \cdot b^4 = 40a^5b^4$
- 3) $2x^2y^4z^2 \cdot 5xy^3 \cdot 6xz^3 = 2 \cdot 5 \cdot 6 \cdot x^2 \cdot x \cdot x \cdot y^4 \cdot y^3 \cdot z^2 \cdot z^3 = 60x^4y^7z^5$
- 4) $m^8 : m^3 = m^{8-3} = m^5$
- 5) $(a^5)^2 : a^3 = a^{10} : a^3 = a^{10-3} = a^7$
- 6) $\frac{a^6 \cdot b^3}{a^2 \cdot b^9} = \frac{a^{6-2} \cdot b^3}{b^{9-3}} = \frac{a^4}{b^6}$
- 7) $\frac{x^9 \cdot y^5}{x^4 \cdot y^3} = \frac{x^{9-4} \cdot y^{5-3}}{1} = x^5y^2$
- 8) $\frac{a^5 \cdot b^3}{a^9 \cdot b^7} = \frac{1}{a^{9-5} \cdot b^{7-3}} = \frac{1}{a^4b^4}$
- 9) $\frac{15a^5b^2}{12a^3b^5} = \frac{5a^{5-3}}{4b^{5-2}} = \frac{5a^2}{4b^3}$
- 10) $\frac{24x^5y^3}{18x^9y^5} = \frac{4}{3x^{9-5}y^{5-3}} = \frac{4}{3x^4y^2}$
- 11) $(y^2)^4 = y^{2 \cdot 4} = y^8$
- 12) $(a^2b^3)^4 = (a^2)^4 \cdot (b^3)^4 = a^{2 \cdot 4} \cdot b^{3 \cdot 4} = a^8 \cdot b^{12}$
- 13) $(2x^2)^4 = 2^4 \cdot (x^2)^4 = 16 \cdot x^{2 \cdot 4} = 16x^8$
- 14) $(3a^5b^4)^3 = 3^3 \cdot (a^5)^3 \cdot (b^4)^3 = 27a^{15}b^{12}$
- 15) $\left(\frac{u^2}{v^3}\right)^4 = \frac{(u^2)^4}{(v^3)^4} = \frac{u^{2 \cdot 4}}{v^{3 \cdot 4}} = \frac{u^8}{v^{12}}$
- 16) $\left(\frac{2a^6}{3b^7}\right)^4 = \frac{2^4 \cdot (a^6)^4}{3^4 \cdot (b^7)^4} = \frac{16a^{6 \cdot 4}}{81b^{7 \cdot 4}} = \frac{16a^{24}}{81b^{28}}$
- 17) $\frac{a^2b}{c} : \frac{c^2}{ab^2} = \frac{a^2b}{c} \cdot \frac{ab^2}{c^2} = \frac{a^2 \cdot a \cdot b \cdot b^2}{c \cdot c^2} = \frac{a^3b^3}{c^3}$
- 18) $(x^2y^3)^2 xy = (x^2)^2 \cdot (y^3)^2 \cdot x \cdot y = x^4 \cdot y^6 \cdot x \cdot y = x^5y^7$
- 19) $(a^2)^3 : \frac{1}{a^5} = a^6 \cdot \frac{a^5}{1} = \frac{a^6}{1} \cdot \frac{a^5}{1} = \frac{a^{6+5}}{1} = \frac{a^{11}}{1} = a^{11}$
- 20) $(x^3y^4)^5 : (x^4y^3) = \frac{(x^3)^5 \cdot (y^4)^5}{x^4y^3} = \frac{x^{15} \cdot y^{20}}{x^4 \cdot y^3} = \frac{x^{15-4} \cdot y^{20-3}}{1} = x^{11}y^{17}$