

Éléments de correction de la feuille d'exercices supplémentaire du chapitre 5

$$\frac{4^5}{4^3} = 4^{5-3} = 4^2$$

$$(9^8)^{-2} = 9^{8 \times (-2)} = 9^{-16}$$

$$7^5 \times 7^9 = 7^{5+9} = 7^{14}$$

$$\frac{15^7}{20^7} = \left(\frac{15}{20}\right)^7 = 0,75^7$$

$$\frac{9^{11}}{6^{11}} = \left(\frac{9}{6}\right)^{11} = 1,5^{11}$$

$$8^5 \times 7^5 = (8 \times 7)^5 = 56^5$$

$$(4^2)^7 = 4^{2 \times 7} = 4^{14}$$

$$\frac{23^{-4}}{23^5} = 23^{-4-5} = 23^{-9}$$

$$4^9 \times 5^9 = (4 \times 5)^9 = 20^9$$

$$\frac{7^6}{21^6} = \left(\frac{7}{21}\right)^6 = \left(\frac{1}{3}\right)^6$$

$$3^{-8} \times 3^{12} = 3^{-8+12} = 3^4$$

$$(7^{-9})^{-5} = 7^{-9 \times (-5)} = 7^{45}$$

$$\frac{14^{10}}{14^{13}} = 14^{10-13} = 14^{-3}$$

$$6^4 \times 6^{-10} = 6^{4-10} = 6^{-6}$$

$$5^7 \times 6^7 = (5 \times 6)^7 = 30^7$$

$$\frac{7^{-5}}{7^{-9}} = 7^{-5-(-9)} = 7^{-5+9} = 7^4$$

$$(2^{-6})^3 = 2^{-6 \times 3} = 2^{-18}$$

$$3^7 \times (-5)^7 = (3 \times (-5))^7 = (-15)^7$$

$$\frac{2^3 \times 2^4}{(2^2)^5} = \frac{2^{3+4}}{2^{2 \times 5}} = \frac{2^7}{2^{10}} = 2^{7-10} = 2^{-3}$$

$$\frac{3^3 \times (3^4)^2}{81} = \frac{3^3 \times 3^{4 \times 2}}{3^4} = \frac{3^3 \times 3^8}{3^4} = \frac{3^{3+8}}{3^4} = \frac{3^{11}}{3^4} = 3^{11-4} = 3^7$$

$$\frac{6^7 \times 36}{(6^{-2})^5} = \frac{6^7 \times 6^2}{6^{-2 \times 5}} = \frac{6^{7+2}}{6^{-10}} = \frac{6^9}{6^{-10}} = 6^{9-(-10)} = 6^{9+10} = 6^{19}$$

$$(5^3 \times 5^4)^2 = (5^{3+4})^2 = (5^7)^2 = 5^{7 \times 2} = 5^{14}$$

$$\frac{6^4 \times 36}{9^5 \times 3^{-4}} = \frac{6^4 \times 6^2}{(3^2)^5 \times 3^{-4}} = \frac{6^{4+2}}{3^{2 \times 5} \times 3^{(-4)}} = \frac{6^6}{3^{10} \times 3^{(-4)}} = \frac{6^6}{3^{10-4}} = \frac{6^6}{3^6} = \left(\frac{6}{3}\right)^6 = 2^6$$

$$\frac{10^4 \times 1000^{-1}}{100^{-3}} = \frac{10^4 \times (10^3)^{-1}}{(10^2)^{-3}} = \frac{10^4 \times 10^{3 \times (-1)}}{10^{2 \times (-3)}} = \frac{10^4 \times 10^{-3}}{10^{-6}} = \frac{10^{4-3}}{10^{-6}} = \frac{10^1}{10^{-6}} = 10^{1-(-6)} = 10^{1+6} = 10^7$$

$$\frac{2^3 \times 4^{-5}}{8^{-4}} = \frac{2^3 \times (2^2)^{-5}}{(2^3)^{-4}} = \frac{2^3 \times 2^{2 \times (-5)}}{2^{3 \times (-4)}} = \frac{2^3 \times 2^{-10}}{2^{-12}} = \frac{2^{3-10}}{2^{-12}} = \frac{2^{-7}}{2^{-12}} = \frac{2^{-7}}{2^{-12}} = 2^{-7-(-12)} = 2^{-7+12} = 2^5$$

$$\frac{3^{-4} \times 9^3}{27 \times 3^{-2}} = \frac{3^{-4} \times (3^2)^3}{3^3 \times 3^{-2}} = \frac{3^{-4} \times 3^{2 \times 3}}{3^3 \times 3^{-2}} = \frac{3^{-4} \times 3^6}{3^{3 \times (-2)}} = \frac{3^{-4+6}}{3^{-6}} = \frac{3^2}{3^{-6}} = 3^{2-(-6)} = 3^{2+6} = 3^8$$