Exercise 2015-9ƎB-00001(1)

(1) Simplify (without a calculator):
Write the answers as positive exponents!

(a) $x^3 \times x^{-2} \times x^5 \div x^4$

(b) $(2m^3n^{-2})^3$

(c) $p^3(p^3)^0$

(d) $y^{a+2b} \div y^{a-b}$

(e) $\sqrt{\frac{81m^7n}{25mn^{-9}}}$

(f) $\frac{12a^3b^7}{-4a^4b^8}$

(g) $\left(\frac{3m^3p^2t}{15mp^2t^{-2}}\right)^3$

(h) $\frac{a^5 \times b^3 \div (a^4 \,.\, b^{-1})}{a^8b^7}$

(i) $\sqrt[3]{27x^9y^{12}} + 4x^3(y^8)^{\frac{1}{2}}$

(j) $(k^{x-2})^2$

(2) Solve x:

(a) $27^x = 9^{x-1}$

(b) $5^{3x+4} = 1$

(c) $x^{\frac{3}{4}} = 8$

(d) $32^{x-1} = \frac{1}{2}$

(e) $0{,}25 = 4^{1-2x}$

(f) $49^{x+3} = \sqrt{7}$

(3) Simplify and write the answer in scientific notation: (Without a calculator.)

(a) $(2 \times 10^3) \times (3{,}5 \times 10^{-2})$

(b) $800 \times 400 \div 5\,000$

(c) $(4{,}2 \times 10^5) + (1{,}346 \times 10^{-1})$

(d) $3(8{,}3 \times 10^7)$