Corrections

Corrigés Savoir Cd. 1

Corrigé Exercice 1

1. a)

$A = 7x$	$B = 4x$	$C = 16a$	$G = 3p$	$H = 8t^2$
$D = 7x^2$	$E = 5x + 2x^2$ impossible	$F = 3n^2$	$I = 4x^3 + x^2$ impossible	$J = 8y$

b)

$K = 8x + 5$	$L = 3 + a + a^2$	$R = 19n + 14 + n^2$
$M = 5m^2 + 7m$	$N = 7x + 2x^2 + 1$	$S = 4e^2 + 4e + 5$
$P = 2x^3 + 4x + 6$	$Q = 6y^2 + 5 + 2y$	$T = 4x + 3x^2 + 4x^3$

2. a)

$V = x^3$	$W = a^3$	$X = n^4$	$B = p^4$	$C = a^4 \times b^5$
$Y = a^2b$	$Z = x^4$	$A = x^2$	$D = x^2y^2$	$E = n^6p^4$

b)

$F = 2x^2$	$G = 6y^2$	$H = 15a^2$	$L = 4p^2$	$M = 6x^3$
$I = 4x^3$	$J = 24n$	$K = 21x^2$	$N = 16t^3$	$P = 6a^3b^4$

3.a)

$Q = 6x + 8$	$R = 3n + 15$	$W = 9a^2 + 3 + 6a$
$S = 8x + 4$	$T = 18 + 12x^2$	$X = 20x + 8x^2$
$U = 2x + 4x^2$	$V = 35 + 14y + 19y^2$	$Y = 4n + 2n^2 + 6$

b)

$A = 5x + 3x^2$	$B = 2a^2 + 4a$	$G = 3x^2 + 2x + x^4$
$C = 2x^2 + x^3$	$D = 5x^2 + x$	$I = n^3 + 2n^2$
$E = 2x + x^2 + 3x^3$	$F = 3n^2 + 2n^3$	$H = 2a^2b + 3a^3b^2 + ab^2$

c)

$K = 8x + 6x^2$	$L = 16x^2 + 4x$	$R = 2x^2 + 6x^3 + 2x^4$
$M = 6a^3 + 15a$	$N = 5y^3 + 5y^2$	$T = 3n^2 + 9n + 39n^4$
$P = 100n + 10n^2$	$Q = 3x + 6x^2 + 9x^3$	$S = 6a^3b + 3a^2b^3$

Corrigé Exercice 2

1.

$V = 3x^2 + 4x + 6x + 8$
$V = 3x^2 + 10x + 8$

$W = 2x + 8x^2 + 1 + 4x$
$W = 8x^2 + 6x + 1$

$D = 4a + 12a^2 + 12 + 36a$
$D = 12a^2 + 40a + 12$

$X = 5x + 5 + 3x^2 + 3x$
$X = 3x^2 + 8x + 5$

$Y = 4 + x + 16x + 4x^2$
$Y = 4x^2 + 17x + 4$

$E = 4x^2 + 28x + x^3 + 7x^2$
$E = x^3 + 11x^2 + 28x$

$Z = 8n + 10n^2 + 12 + 15n$
$Z = 10n^2 + 23n + 12$

$A = +7y + 3y + 21$
$A = y^2 + 10y + 21$

$F = 4n^2 + 6n + 8n^3 + 8n + 12 + 16n^2$
$F = 8n^3 + 20n^2 + 14n + 12$

$B = 3x^2 + 2 + 6x^3 + 4x$
$B = 6x^3 + 3x^2 + 4x + 2$

$C = +2x^2 + 4x + 3x^2 + 6x + 12$
$C = x^3 + 5x^2 + 10x + 12$

$G = 3x^4 + x^3 + 4x^2 + 6x^3 + 2x^2 + 8x + 3x^2 + x + 4$
$G = 3x^4 + 7x^3 + 9x^2 + 9x + 4$

2.

$U = (x + 3)(x + 3)$
$U = x^2 + 3x + 3x + 9$
$U = x^2 + 6x + 9$

$V = (2x + 5)(2x + 5)$
$V = 4x^2 + 10x + 10x + 25$
$V = 4x^2 + 20x + 25$

$Y = (2a + 7)(2a + 7)$
$Y = 4a^2 + 14a + 14a + 49$
$Y = 4a^2 + 28a + 49$

$W = (1 + 2n)(1 + 2n)$
$W = 1 + 2n + 2n + 4n^2$
$W = 1 + 4n + 4n^2$

$X = (5 + 4x)(5 + 4x)$
$X = 25 + 20x + 20x + 16x^2$
$X = 25 + 40x + 16x^2$

$Z = (a + b)(a + b)$
$Z = a^2 + ab + ba + b^2$
$Z = a^2 + 2ab + b^2$

3.

$H = 2 \times (x + 3) \times (2 + 4x)$
$H = 2 \times (2x + 4x^2 + 6 + 12x)$
$H = 2 \times (4x^2 + 14x + 6)$
$H = 8x^2 + 28x + 12$

Ou $H = 2 \times (x + 3) \times (2 + 4x)$
$H = (2x + 6)(2 + 4x)$
$H = 4x + 8x^2 + 12 + 24x$
$H = 8x^2 + 28x + 12$

$I = (2x + 1) \times 3 \times (x + 4)$
$I = (2x + 1)(3x + 12)$
$I = 6x^2 + 24x + 3x + 12$
$I = 6x^2 + 27x + 12$

$L = 3a(2 + 5a)(a + 2a^2)$
$L = (6a + 15a^2)(a + 2a^2)$
$L = 6a^2 + 12a^3 + 15a^3 + 30a^4$
$L = 30a^3 + 27a^3 + 6a^2$

$J = 3(x + 2)(2x + 3)$
$J = (3x + 6)(2x + 3)$
$J = 6x^2 + 9x + 12x + 18$
$J = 6x^2 + 21x + 18$

$K = n(n + 1)(n + 2)$
$K = (n^2 + n)(n + 2)$
$K = n^3 + 2n^2 + n^2 + 2n$
$K = n^3 + 3n^2 + 2n$

Ou $K = n(n + 1)(n + 2)$
$K = n(n^2 + 2n + n + 2)$
$K = n(n^2 + 3n + 2)$
$K = n^3 + 3n^2 + 2n$

$M = (x + 1)(x + 2)(x + 3)$
$M = (x + 1)(x^2 + 3x + 2x + 6)$
$M = (x + 1)(x^2 + 5x + 6)$
$M = x^3 + 5x^2 + 6x + x^2 + 5x + 6$
$M = x^3 + 6x^2 + 11x + 6$

Ou $M = (x + 1)(x + 2)(x + 3)$
$M = (x^2 + 2x + x + 2)(x + 3)$
$M = (x^2 + 3x + 2)(x + 3)$
$M = x^3 + 3x^2 + 3x^2 + 9x + 2x + 6$
$M = x^3 + 6x^2 + 11x + 6$

Corrigé Exercice 3

1.

$A = 3x$ $B = -2x$ $C = -13a + 3a = -10a$
$D = -7x^2$ $E = -3x^2$ $F = n^2$
$K = -x + 7x + 2 - 3 = 6x - 1$ $L = -a + 2a + 1 - 2 = a - 1$
$M = 2m^2 - 7m - 4$ $N = -2x^2 - 4x - 3x = 2x^2 - 7x$

$G = p$ $H = -4t^2$
$I = 3x^3$ $J = -3y + 5y = 2y$
$R = n^2 + 9n - 14$
$S = 2e^2 - 4e + 3$

2.

$F = -2x^2$ $G = -6y^2$ $H = +15a^2$
$I = +4x^3$ $J = -24n$ $K = -21x^2$

$L = -4p^2$ $M = +6x^3$
$P = -6a^3b^4$

Corrigé Exercice 3 (suite)

3.

$Q = 6x - 8$

$S = -8x + 4$

$U = -x + 2x^2$

$R = +3n - 15$

$T = 18 - 12x^2$

$V = +5 - 2y + 7y^2$

$W = -9a^2 + 3 + 6a$

$X = 10x + 4x^2$

$Y = +2n + n^2 - 3$

Corrigé Exercice 4

A = (2 –3𝔵)(4𝔵 +5)
A = (8𝔵+10–12𝔵²–15𝔵)
A = **–12𝔵² –7𝔵 +10**

B = (1 –2𝔵)(7𝔵 –2)
B = (7𝔵 –2 –14𝔵² +4𝔵)
B = **–14𝔵² +11𝔵 –2**

C = (5𝔵 –1)²
C = (5𝔵 –1)(5𝔵 –1)
C = (25𝔵²–5𝔵–5𝔵+1)
C = **25𝔵² –10𝔵 +1**

D = (–3𝔵 +6)(𝔵 –1)
D = (–3𝔵² +3𝔵 +6𝔵 –6)
D = **–3𝔵² +9𝔵 –6**

E= (2 –3x)(4x +5)
***E** = 8x +10 –12x² –15x*
E** = **–12x² –7x +10

F= (1 –2x)(7x –2)
***F**= 7x –2 –14x² +4x*
F** = **–14x² +11x –2

G = (–3x +6)(x –1)
***G** = –3x² +3x +6x –6*
G** = **–3x² +9x –6

H = (5x –1)²
***H**= (5x –1)(5x –1)*
***H** = 25x² –5x –5x +1*
H** = **–25x² –10x +1

J = 4 – 2x(2 +4x)
Juste le *–2x* en facteur
J = 4 –4x –8x²
*J= **–8x² –4x + 4***

K = (–5x –3)(x –2)
K =–5x² +10x –3x +6
*K= **–5x² +7x +6***

L= (2x – 7)²
L= 3x –2 –3x² +2x
*L= **–3x² +5x –2***

M= (1 – x)(3x –2)
M= (2x – 7)(2x – 7)
M = 4x² –14x –14x +49
*M= **4x² –28x +49***

Corrigé Exercice 5 *

1)

***A₁** = 3(4x –20 –2x² +10x)*
***A₁** = 3(–2x² +14x –20)*
A₁** = **–6x² +42x –60

***A₂** = – (–6x –2x² +15 +5x)*
***A₂** = – (–2x² –x +15)*
A₂** = **2x² +x –15

***A₃** = –2(4x +1)(4x +1)*
***A₃** = –2(16x² +4x +4x +1)*
***A₃** = –2(16x² +8x +1)*
A₃** = **–32x² –16x –2

A_4= 4x(2x² –3x +2x –3)
A_4= 4x(2x² –x –3)
A_4= 8x³ –4x² –12x

2)

B_1 = (4x –2 –12x² +6x)(x + 1)
B_1 = (–12x² +10x –2)(x + 1)
B_1 = –12x³ –12x² +10x² +10x –2x –2
*B_1 = **–12x³ –2x² +8x –2***

B_2 = (1 –2x)(49x² –14x –14x +4)
B_2 = (1 –2x)(49x² –28x +4)
B_2 = 49x² –28x +4 –98x³ +56x² –8x
*B_2 = **–98x³ +105x² –36x +4***

***B_4** = (x² –2x +x –2)(x–3)*
***B_4** = (x² –x –2)(x–3)*
***B_4** = x³–3x²–x²+3x–2x+6*
B_4** = **x³ –4x² +x +6

B_3 = (x + 4) (x + 4)²
B_3 = (x + 4) (x² +4x +4x +16)
B_3 = (x + 4) (x² +8x +16)
B_3 = x³ +8x² +16x +4x² +32x +64
*B_3 = **x³ +12x² +48x +64***

***B_5** = (2x+1)(x² –6x +9)*
***B_5** = 2x³–12x²+18x+x² –6x+9*
B_5** = **2x³–11x² +12x +9

***B_6** = (2x – 5)²(2x –5)*
***B_6** = (4x²–20x+25)(2x–5)*
***B_6** = 8x³ –20x² –40x² +100x +50x –125*
B_6** = **8x³ –60x² +150x –125

Corrigé Exercice 5 * (suite)

3)

$C_1 = 3x(2x^2 - 4x + 7)$
$\boldsymbol{C_1 = 6x^3 - 12x^2 + 21x}$

$C_2 = (2x + 3)(x^2 + 4x + 5)$
$C_2 = 2x^3 + 8x^2 + 10x + 3x^2 + 12x + 15$
$\boldsymbol{C_2 = 2x^3 + 11x^2 + 22x + 15}$

$C_4 = (1 - 2x)(x^2 - 3x + 1)$
$C_4 = x^2 - 3x + 1 - 2x^3 + 6x^2 - 2x$
$\boldsymbol{C_4 = -2x^3 + 7x^2 - 5x + 1}$

$C_5 = (x^2 - 3)(-2x^2 + 4x - 3)$
$C_5 = -2x^4 + 4x^3 - 3x^2 + 6x^2 - 12x + 9$
$\boldsymbol{C_5 = -2x^4 + 4x^3 + 3x^2 - 12x + 9}$

$C_3 = (3x^2 + 2x + 1)(4 + x)$
$C_3 = 12x^2 + 3x^3 + 8x + 2x^2 + 4 + x$
$\boldsymbol{C_3 = 3x^3 + 14x^2 + 9x + 4}$

$C_6 = (x^2 - 2x + 3)(x^2 - 4x - 5)$
$C_6 = x^4 - 4x^3 - 5x^2 - 2x^3 + 8x^2 + 10x + 3x^2 - 12x - 15$
$\boldsymbol{C_6 = x^4 - 6x^3 + 6x^2 - 2x - 15}$

4)

$\boldsymbol{D_1} = (2n - 3)(n - 7)$
$\boldsymbol{D_1} = 2n^2 - 14n - 3n + 21$
$\boldsymbol{D_1 = 2n^2 - 11n + 21}$

$\boldsymbol{D_2} = (5 - 4p)(5 - 4p)$
$\boldsymbol{D_2} = 25 - 20p - 20p + 16p^2$
$\boldsymbol{D_2 = 16p^2 - 40p + 25}$

$\boldsymbol{D_4} = (a + x)(2 - 2a)$
$\boldsymbol{D_4 = 2a - 2a^2 + 2x - 2ax}$

$\boldsymbol{D_6} = (2n + p)(3p - n)$
$\boldsymbol{D_6} = 6np - 2n^2 + 3p^2 - np$
$\boldsymbol{D_6 = 5np - 2n^2 + 3p^2}$

5)

$A_1 = 3x - \frac{5}{2}x = \frac{6}{2}x - \frac{5}{2}x$
$\boldsymbol{A_1 = \frac{1}{2}x}$

$A_2 = \frac{3}{4}x - \frac{2x}{5} = \frac{15}{20}x - \frac{8}{20}x$
$\boldsymbol{A_2 = \frac{7}{20}x}$

$A_3 = \frac{x}{4} + \frac{2x}{5} = \left(\frac{1}{4} + \frac{2}{5}\right)x$
$A_3 = \left(\frac{5}{20} + \frac{8}{20}\right)x = \boldsymbol{\frac{13}{20}x}$

$A_4 = x - \frac{5x}{7} = \frac{7}{7}x - \frac{5}{7}x$
$\boldsymbol{A_4 = \frac{2}{7}x}$

$A_5 = \frac{2x}{5} - \frac{x}{3} = \frac{6}{15}x - \frac{5}{15}x$
$\boldsymbol{A_5 = \frac{1}{15}x}$

$A_6 = 4x - \frac{x}{3} = \frac{12}{3}x - \frac{1}{3}x$
$\boldsymbol{A_6 = \frac{11}{3}x}$

6)

$B_1 = \left(\frac{4x}{3} + 1\right)^2 = \frac{16}{9}x^2 + 2 \times \frac{4}{3}x + 1$
$\boldsymbol{B_1 = \frac{16}{9}x^2 + \frac{8}{3}x + 1}$

$B_2 = \left(\frac{x}{5} - \frac{3}{2}\right)^2 = \frac{1}{25}x^2 - 2 \times \frac{1}{5} \times \frac{3}{2}x + \frac{9}{4}$
$\boldsymbol{B_2 = \frac{1}{25}x^2 - \frac{3}{5}x + \frac{9}{4}}$

$B_3 = (2a + 1)\left(3 - \frac{a}{6}\right) = 6a - 2 \times \frac{1}{6}a^2 + 3 - \frac{1}{6}a$
$B_3 = -\frac{1}{3}a^2 + \left(6 - \frac{1}{6}\right)a + 3 = \boldsymbol{-\frac{1}{3}a^2 + \frac{35}{6}a + 3}$

$B_4 = \left(\frac{1}{2}a - 3\right)\left(\frac{a}{2} + 3\right) = \left(\frac{1}{2}a - 3\right)\left(\frac{1}{2}a + 3\right)$
$B_4 = \boldsymbol{\frac{1}{4}a^2 - 9}$