**DM n°1 – 2nde - Corrigé**

**Exercice 1**

$$A = \frac{\frac{4}{5}-\frac{4}{3}}{2+\frac{1}{3}} = \frac{\frac{12-20}{15}}{\frac{6+1}{3}} = -\frac{8}{15}÷\frac{7}{3} = -\frac{8}{15}×\frac{3}{7} = -\frac{8}{35}$$

$$B =\left(3-\frac{2}{7}\right)×\left(\frac{4}{3}-\frac{6}{5}\right)= \frac{21-2}{7}×\frac{20-18}{15} = \frac{19}{7}×\frac{2}{15} = \frac{38}{105}$$

$$C = \frac{15}{49}×\left(-\frac{7}{18}\right)×\frac{-8}{25}×\left(-35\right) = -\frac{3×5×7×2×2×2×7×5}{7×7×2×3×3×5×5} = -\frac{4}{3}$$

**Exercice 2**

**a-** $D = \sqrt{108} = \sqrt{36×3} = \sqrt{36}×\sqrt{3} = 6\sqrt{3} $

**b-** $E = \sqrt{180}-3\sqrt{20}+2\sqrt{125} = \sqrt{36×5}-3\sqrt{4×5}+2\sqrt{25×5} = 6\sqrt{5}-3×2\sqrt{5}+2×5\sqrt{5} = 10\sqrt{5} $

$$c- F = \left(\sqrt{2}+1\right)^{2}= \left(\sqrt{2}\right)^{2}+2×1×\sqrt{2}+1^{2} = 2+2\sqrt{2}+1 = 3+2\sqrt{2}$$

$$G = \left(\sqrt{7}-3\right)^{2}= \left(\sqrt{7}\right)^{2}-2×3×\sqrt{7}+3^{2} = 7-6\sqrt{7}+9 = 16-6\sqrt{7}$$

$$H = \left(\sqrt{5}-2\right)\left(2\sqrt{5}-1\right) = \sqrt{5}×2\sqrt{5}-\sqrt{5}×1-2×2\sqrt{5}+2×1 = 2×5-\sqrt{5}-4\sqrt{5}+2 = 12-5\sqrt{5}.$$

$$I = \left(2\sqrt{5}-3\sqrt{2}\right)^{2}= \left(2\sqrt{5}\right)^{2}-2×2\sqrt{5}×3\sqrt{2}+\left(3\sqrt{2}\right)^{2}= 4×5-2×2×3\sqrt{5}×\sqrt{2}+9×2 = 20+18-12\sqrt{10} = 38-12\sqrt{10}$$

$J = \left(2\sqrt{5}+3\right)\left(3\sqrt{2}-1\right) = 6\sqrt{10}-2\sqrt{5}+9\sqrt{2}-3$.

**Exercice 3**

**a-** K = 6x²-8x+14+6x²-15x = **12x²-23x+14**

L = 6x²+3x+10x+5-(2x²+6x-4x-12) = 6x²+13x+5-2x²-6x+4x+12 = **4x²+11x+17**

M = **-13x3-6x²+13x-6**

**b-** N = (2x+1)[(3x-7)+(x+5)] = **(2x+1)(4x-2)** = **2(2x+1)(2x-1)**

O = (5x-3)²-(5x-3)(3x+4) = (5x-3)[(5x-3)-(3x+4)] = (5x-3)(5x-3-3x-4) = **(5x-3)(2x-7)**

**Exercice 4**

**a-** L’image de 2 est **-2**.

**b-** L’image de -6 est **6**.

**c-** Les antécédents de 2 sont **-4, environ 4,3 et 10**.

**d-** Les antécédents de 4 sont **-10, -5 et 6**.

**e-** 8 n’a pas d’antécédent.

**Exercice 5**

$On pose B=111 111 111 111-222 222, alors A = \sqrt{B}$

$$B = 111 111 000 000+111 111-2×111 111 = 111 111 000 000-111 111$$

$$ =111 111\left(1 000 000-1\right)=111 111×999 999=111 111×111 111×9=111 111^{2}×3^{2}$$

Donc A = 111 111×3 = **333 333**.