Exercice 1   **Fractions**

$$A = \frac{\dfrac{8}{15} - 2}{\dfrac{2}{5} - \dfrac{1}{10}} = \frac{\dfrac{-22}{15}}{\dfrac{3}{10}} = \frac{-22}{15} \times \frac{10}{3} = \frac{-22 \times 2}{3 \times 3} = \boxed{\frac{-44}{9}}$$

$$B = 10 \times \left(\frac{5}{7} - 2\right)^2 = 10 \times \left(\frac{-9}{7}\right)^2 = 10 \times \frac{81}{49} = \boxed{\frac{810}{49}}$$

Exercice 2   **Puissances**

$A = 3 - 5 \times 2^3 = 3 - 5 \times 8 = 3 - 40 = \boxed{-37}$

$B = 3^7 = 3^5 \times 3^2 = \boxed{3^5 \times 9}$

$C = 6^5 + 6^4 = 6^4 \times (6+1) = \boxed{6^4 \times 7}$

Exercice 3   **Racines carrées**

$A = \sqrt{75} = \sqrt{25 \times 3} = \boxed{5\sqrt{3}}$

$B = 4\sqrt{18} = 4\sqrt{9 \times 2} = 4 \times 3\sqrt{2} = \boxed{12\sqrt{3}}$

$C = 7\sqrt{2} \times 4\sqrt{2} = 28 \times \left(\sqrt{2}\right)^2 = 28 \times 2 = \boxed{56}$

$D = 7 - \left(5\sqrt{3}\right)^2 = 7 - 25 \times 3 = 7 - 75 = \boxed{68}$

$E = \sqrt{5}\left(\sqrt{2} + 3\sqrt{5}\right) = \sqrt{10} + 3 \times 5 = \boxed{15 + \sqrt{10}}$

$F = (5 - 4\sqrt{3})^2 = 25 - 40\sqrt{3} + 16 \times 3 = 25 - 40\sqrt{3} + 48 = \boxed{73 - 40\sqrt{3}}$

$G = 3\sqrt{7} - \sqrt{7} = \boxed{2\sqrt{7}}$

Exercice 4   **Développement**

$A = -2x - 6(-4 + 3x^2) = -2x + 24 - 18x^2 = \boxed{-18x^2 - 2x + 24}$

$B = 5(-2x + 7)(x - 2) = 5(-2x^2 + 4x + 7x - 14) = \boxed{-10x^2 + 55x - 70}$

$C = 2x - (5 - x)(-2 + 5x) = 2x - (-10 + 25x + 2x - 5x^2) = 2x + 10 - 27x + 5x^2$

$\quad C = \boxed{5x^2 - 25x + 10}$

Exercice 5   **Factorisation par facteur commun**

$A = (1-x)^2 - 7(1-x) = (1-x)(1-x) - 7(1-x) = (1-x)(1-x-7) = \boxed{(1-x)(-6-x)}$

$B = 7x(3 - 5x) - (3 - 5x) = \boxed{(3-5x)(7x-1)}$

$C = (2 - x) + 3x(2 - x) = (2 - x) \times 1 + 3x(2 - x) = \boxed{(2-x)(1+3x)}$

$D = 2(x+1)(2-x) + 3(x+1) = (x+1)(2(2-x)) + 3(x+1) = (x+1)(4-2x) + 3(x+1)$

$\quad D = (x + 1)(4 - 2x + 3)$

$\quad D = \boxed{(x+1)(7-2x)}$

$E = -6x^2 + 4x = \boxed{x(-6x+4)}$

$F = 2a^3 - 7a^2 = \boxed{a^2(2a-7)}$

Exercice 6   **Equations**

Résoudre : $\dfrac{x-5}{3} = \dfrac{-2}{5}$

$5(x - 5) = -2 \times 3$

$5x - 25 = -6$

$5x = 19$

$\boxed{x = \dfrac{19}{5}}$

Résoudre : $\dfrac{-2}{7}x + 4 = -5x$

$\dfrac{-2x}{7} + 5x = -4$

$\dfrac{33x}{7} = -4$

$33x = -28$

$\boxed{x = \dfrac{-28}{33}}$

Résoudre : $x - 4x^2 = 0$

$x(1 - 4x) = 0$

$x = 0 \quad \text{ou} \quad 1 - 4x = 0$

$\boxed{x = 0 \quad \text{ou} \quad x = \dfrac{1}{4}}$