3) ✎ Pour tout $x \in \mathbb{R}$,
$$C(x) = (x+3)(x-3) - x(2x-7) = x^2 - 3^2 - (2x^2 - 7x) = x^2 - 9 - 2x^2 + 7x = -x^2 + 7x - 9$$

4) ✎ Pour tout $x \in \mathbb{R}$,
$$D(x) = (x-2)(x^2 + 2x + 4) = x^3 + 2x^2 + 4x - 2x^2 - 4x - 8 = x^3 - 8$$

5) ✎ Pour tout $x \in \mathbb{R}$,
$$E(x) = \left(x - \frac{1}{2}\right)^2 + \frac{3}{4} = x^2 - 2 \times x \times \frac{1}{2} + \left(\frac{1}{2}\right)^2 + \frac{3}{4} = x^2 - x + \frac{1}{4} + \frac{3}{4} = x^2 - x + 1$$

6) ✎ Pour tout $x \in \mathbb{R}$,

$$F(x) = \frac{1}{5}(3x-1)^2 - \frac{4}{5} = \frac{1}{5}[(3x)^2 - 2 \times 3x \times 1 + 1^2] - \frac{4}{5} = \frac{1}{5}(9x^2 - 6x + 1) - \frac{4}{5}$$

$$F(x) = \frac{9}{5}x^2 - \frac{6}{5}x + \frac{1}{5} - \frac{4}{5} = \frac{9}{5}x^2 - \frac{6}{5}x - \frac{3}{5}$$

Exercice 23

👁 Simplifier les expressions ci-dessous :

1) $A = \left(\dfrac{1 + \sqrt{5}}{2}\right)^2 - \dfrac{\sqrt{5} + 1}{2} - 1$

2) $B = \left(\dfrac{\sqrt{2} + \sqrt{6}}{4}\right)^2 + \left(\dfrac{\sqrt{2} - \sqrt{6}}{4}\right)^2$

Correction

1) $A = \left(\dfrac{1 + \sqrt{5}}{2}\right)^2 - \dfrac{\sqrt{5} + 1}{2} - 1 = \dfrac{(1 + \sqrt{5})^2}{4} - \dfrac{2(\sqrt{5} + 1)}{4} - \dfrac{4}{4}$

$A = \dfrac{1^2 + 2 \times 1 \times \sqrt{5} + (\sqrt{5})^2}{4} - \dfrac{2(\sqrt{5} + 1)}{4} - \dfrac{4}{4} = \dfrac{1 + 2\sqrt{5} + 5}{4} - \dfrac{2(\sqrt{5} + 1)}{4} - \dfrac{4}{4}$

$A = \dfrac{6 + 2\sqrt{5}}{4} - \dfrac{2(\sqrt{5} + 1)}{4} - \dfrac{4}{4} = \dfrac{6 + 2\sqrt{5}}{4} + \dfrac{-2\sqrt{5} - 2}{4} - \dfrac{4}{4}$