Ex 2

a / $e^{x^2+x-1} = 1$ $\quad \ln(e^a) = a$ $\quad \ln(1) = 0$

$\Leftrightarrow \ln(e^{x^2+x-1}) = \ln 1 \Leftrightarrow x^2+x-1 = 0$ ← on introduit le logarithme

$\Delta = 1 - 4 \times 1 \times (-1) = 5 \quad (b^2 - 4ac)$

$\Delta > 0$: 2 sol.

$x_1 = \frac{-1-\sqrt{5}}{2} \qquad x_2 = \frac{-1+\sqrt{5}}{2}$

b / $\frac{e^{3x+5}}{e^{3-2x}} = e^{2x^2-1} \Leftrightarrow e^{(3x+5)-(3-2x)} = e^{2x^2-1}$

$\Leftrightarrow e^{3x+5-3+2x} = e^{2x^2-1} \Leftrightarrow e^{5x+2} = e^{2x^2-1}$ $\quad (e^a = e^b \Leftrightarrow a = b)$

$\Leftrightarrow 5x+2 = 2x^2-1 \Leftrightarrow 2x^2-5x-2-1=0$

$\Leftrightarrow 2x^2-5x-3=0$

$\Delta = (-5)^2 - 4 \times 2 \times (-3) = 25+24 = 49$

$\Delta > 0$: 2 sol.

$x_1 = \frac{-(-5)-\sqrt{49}}{2\times 2} = \frac{5-7}{4} = -\frac{2}{4} = -\frac{1}{2}$

$x_2 = \frac{-(-5)+\sqrt{49}}{2\times 2} = \frac{5+7}{4} = \frac{12}{4} = 3$