2.6.5

$(\mathcal{E})$: $x^2 - 5x + m = 0$, $m \in \mathbb{R}$

Existence de solutions: $\Delta \geq 0$

$\Delta = 25 - 4m \geq 0 \Leftrightarrow m \leq \frac{25}{4}$

a) $x' = \frac{1}{x''} \Leftrightarrow x' \cdot x'' = 1$

$P = x'x'' = 1 \Leftrightarrow \frac{c}{a} = 1 \Leftrightarrow \underline{m = 1}$

b) $x' - x'' = 3 \Leftrightarrow \frac{\sqrt{\Delta}}{a} = \sqrt{25 - 4m} = 3$

$\Leftrightarrow 25 - 4m = 9 \Leftrightarrow 4m = 16 \Leftrightarrow \underline{m = 4}$

c) $x' = 2x''$

- $x' + x'' = 3x'' = 5 \Rightarrow x'' = \frac{5}{3}$
- $x' \cdot x'' = 2x''^2 = m \Rightarrow 2 \cdot \frac{25}{9} = n$

$\Rightarrow \underline{m = \frac{50}{9}}$

d) $2x' - x'' = 7 \Rightarrow x'' = 2x' - 7$

$\cdot x' + x'' = 3x' - 7 = 5 \Rightarrow x' = 4$

$\cdot\ x' \cdot x'' = 2x'^2 - 7x' = 32 - 28 = 4 = m$

$\Rightarrow \underline{m = 4}$