2.6.8

$(\mathcal{E}_m)$: $x^2 - (m-2)x + (2m-7) = 0$

Existence des solutions :

$$\Delta = (m-2)^2 - 4(2m-7)$$
$$= m^2 - 4m + 4 - 8m + 28$$
$$= m^2 - 12m + 32 = (m-8)(m-4)$$

$m = 4$: $x^2 - 2x + 1 = 0 \iff (x-1)^2 = 0$

$m = 8$: $x^2 - 6x + 9 = 0 \iff (x-3)^2 = 0$

m		4		8	
Δ	+	0	−	0	+
$\mathcal{E}$	2 sol	$\boxed{1 \text{ sol}}$	aucune sol	$\boxed{1 \text{ sol}}$	2 sol

a) $x' = -x''$:

$S = 0 \iff \frac{-b}{a} = 0 \Rightarrow m - 2 = 0$

$\iff \underline{m = 2}$

b) $x' > 0$ et $x'' > 0$:

- $\Delta > 0$: $m \in]-\infty ; 4[\cup]8 ; +\infty[$
- $P > 0$: $\frac{c}{a} > 0 \Rightarrow 2m - 7 > 0$

$\Leftrightarrow m > \frac{7}{2} \Leftrightarrow m \in]\frac{7}{2} ; +\infty[$

- $S > 0$: $\frac{-b}{a} > 0 \Rightarrow m - 2 > 0$

$\Leftrightarrow m > 2 \Leftrightarrow m \in]2 ; +\infty[$

Ces trois conditions réunies :

$$\underline{m \in]\frac{7}{2} ; 4[\cup]8 ; +\infty[}$$

c) $\Delta = 0$: $\underline{m = 4 \text{ ou } m = 8}$