CHAPITRE IV : NOMBRES RÉELS

Correction

On a

$$\begin{aligned}
&\left(\sqrt{a+2\sqrt{a-1}}+\sqrt{a-2\sqrt{a-1}}\right)^2\\
=&a+2\sqrt{a-1}+2\sqrt{(a+2\sqrt{a-1})(a-2\sqrt{a-1})}+a-2\sqrt{a-1}\\
=&2a+2\sqrt{a^2-4(a-1)}=2a+2\sqrt{(a-2)^2}\\
=&2a+2|a-2|\\
=&\left\{\begin{array}{ll} 2a+2(a-2) & \text{si } a-2\geqslant 0\\ 2a-2(a-2) & \text{si } a-2\leqslant 0\end{array}\right. =\left\{\begin{array}{ll} 4(a-1) & \text{si } a\geqslant 2\\ 4 & \text{si } a\leqslant 2\end{array}\right.
\end{aligned}$$

Donc

$$\sqrt{a+2\sqrt{a-1}}+\sqrt{a-2\sqrt{a-1}}=\left\{\begin{array}{ll} 2\sqrt{a-1} & \text{si } a\geqslant 2,\\ 2 & \text{si } a\leqslant 2.\end{array}\right.$$