Consider now the $j$th entry of $A\nu_+$ and let $p_1(j)$ be as defined in equation (2.7). If $p_1(j) = 0$ then $(Ax_+(t))_j = 0$. If $1 \leq p_1(j) \leq p_1 - 1$, then on examining the asymptotic effect of (2.8) in (3.11), we obtain that there exists a sufficiently large $t_0(j) \geq 0$ such that

$$(Ax_+(t))_j > 0, \quad \forall t \geq t_0(j) \quad (3.12)$$

or equivalently,

$$A\nu_+ \in X_A(R^+_4). \quad (3.13)$$

The proof that $A^mx_+ \in X_A(R^+_4)$ for any $m \geq 2$ follows similarly.

(iii) $\Rightarrow$ (i) On letting $m = p_1 + 1$, this implication is trivial.

Acknowledgment

The authors would like to thank Professor Ronald J. Stern for very helpful discussions.

References


