Verifying V(s)

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①

$S = \{s_1, s_2, s_3, s_4\}$ $A = \{a_1, a_2\}$ $f_R = \begin{matrix} s_1 \\ s_2 \\ s_3 \\ s_4 \end{bmatrix} \begin{bmatrix} 2 \\ 1 \\ -1 \\ 10 \end{bmatrix}$ $f_\pi = \begin{matrix} s_1 \\ s_2 \\ s_3 \\ s_4 \end{bmatrix} \begin{bmatrix} a_1 \\ a_1 \\ a_2 \\ a_2 \end{bmatrix}$

Deterministic $\gamma = 0.9$

$s_f = f(s,a) = \begin{matrix} & a_1 & a_2 \\ s_1 & s_2 & s_2 \\ s_2 & s_1 & s_3 \\ s_3 & s_3 & s_1 \\ s_4 & s_1 & s_4 \end{bmatrix}$

Solution : $v(s) = \begin{matrix} s_1 & s_2 & s_3 & s_4 \\ 14.74, & 15.26, & 15.26, & 99.13 \end{bmatrix}$

$V(s_1) = f_R(s_f) + 0.9\,(V(s_f))$ $s_f = s_2$ $s_1 \to a_1$

$= 1 + 0.9\,(V(s_2))$

$= 1 + 0.9\,(15.26)$

$14.74 = 14.734 \to$ coincides

$V(s_2) = f_R(s_f) + 0.9\,(V(s_f))$ $s_f = s_1$ $s_2 \to a_1$

$= 2 + 0.9\,(V(s_1))$

$= 2 + 0.9\,(14.74)$

$= 15.266 \to$ coincides

$V(s_3) = f_R(s_f) + 0.9\,(V(s_f))$ $s_f = s_1$ $s_3 \to a_2$

$= 2 + 0.9\,(V(s_1))$

$= 2 + 0.9\,(14.74)$

$= 15.266 \to$ coincides

$V(s_4) = f_R(s_f) + 0.9\,(V(s_f))$ $s_f = s_4$ $s_4 \to a_2$

$= f_R(s_4) + 0.9\,(V(s_4))$

$= 10 + 0.9\,(99.13)$

$= 99.217 \to$ coincides