Resposta.

Estado A $0 \leq y \leq \frac{1}{2}$

B $2 \leq y \leq 4$

C estado absorvente

$$\begin{array}{c} \\ A \\ B \\ C \end{array} \begin{array}{c} \begin{array}{cccc} A & & B & C \end{array} \\ \begin{bmatrix} P_A & P_B & 1-P_A-P_B \\ P_B & 0 & 1-P_A-P_B \\ P_A & P_B & 1-P_A-P_B \end{bmatrix} \end{array}$$

$$\pi = \left[P_A \; ; \; \frac{P_B}{1+P_B} \; ; \; \frac{1-P_A-P_A P_B}{1+P_B} \right]$$

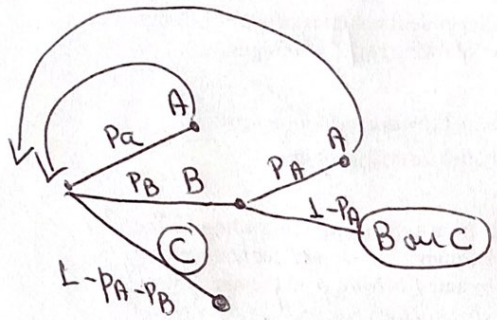
$$ARL = \frac{1+P_B}{1-P_A-P_A P_B}$$

Pela esperança condicional

A - $y < 2$ — P_A

B - $2 \leq y \leq 4$ — P_B

C - $y > 4$ — $1 - P_A - P_B$.



$$E(X) = 1 - P_A - P_B + 2P_B(1-P_A) + P_BP_A(2 + E(X)) + P_A(1 + E(X)) =$$

$$E(X) = 1 - P_A - P_B + 2P_B - 2P_AP_B + 2P_AP_B + P_BP_A E(X) + P_A + P_A E(X)$$

$$E(X)\left[1 - P_A - P_AP_B\right] = 1 + P_B$$

$$\boxed{E(X) = \frac{1 + P_B}{1 - P_A - P_AP_B}}$$