

$$S_t \circ c(h)(a_s)_{ti} c(s) + \mathfrak{S}_e m^i n(a_r)$$

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Absorption-time distribution for an asymmetric random walk

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Consider the random walk on the set of nonnegative integers that takes two steps to the left (just one step from state 1) with probability $p \in (1/3, 1)$ and one step to the right with probability $1 - p$. State 0 is absorbing and the initial state is a fixed positive integer j_0 . Here we find the distribution of the absorption time. The absorption time is the duration of (or the number of coups in) the well-known Labouchere betting system. As a consequence of this, we obtain in the fair case ($p = 1/2$) the asymptotic behavior of the Labouchere bettor's conditional expected deficit after n coups, given that the system has not yet been completed.