

Solution for exercise 6.2.3 in Karlin and Pinsky

$$\begin{aligned} E \left[\sum_{i=1}^N W_i \right] &= E \left[\sum_{i=1}^N i S_i \right] \\ &= \sum_{i=1}^N i E[S_i] \\ &= \sum_{i=1}^N \frac{i}{\mu_i} \end{aligned}$$