#3

$$S = \{(s, j) \mid s \in \mathbb{R}_+, j \in \{0, 1\}\}$$

where s represents the skill level and j represents the employment state (0 for unemployed, 1 for employed).

$$A = \{\alpha \mid \alpha \in [0, 1]\}$$

$P_R : S \times A \times \mathbb{R} \times S$ (no terminal state)

$P_R((s, j), \alpha, r, (s', j')) =$

$$\begin{cases} p, & \text{if } j = 1,\ j' = 0,\ r = 8.60 \cdot \alpha \cdot f(s),\ s' = (1 + g(s)) \cdot 8.60 \cdot (1 - \alpha) \\ h(s), & \text{if } j = 0,\ j' = 1,\ r = 0,\ s' = s \\ 1 - p, & \text{if } j = 1,\ j' = 1,\ r = 8.60 \cdot \alpha \cdot f(s),\ s' = (1 - g(s)) \cdot 8.60 \cdot (1 - \alpha) \\ 1 - h(s), & \text{if } j = 0,\ j' = 0,\ r = 0,\ s' = s e^{-\left(\frac{\log(2)}{\lambda}\right)} \end{cases}$$

$R(s, \alpha) = \hat{\theta} \cdot \omega \cdot \alpha \cdot f(s)$.

Since there is no terminal-states use $\gamma \in [0, 1)$