Initialize θ arbitrarily
for each episode $\{s_1, a_1, r_2, ..., s_{T-1}, a_{T-1}, r_T\} \sim \pi_\theta$ **do**
  for $t = 1$ to $T - 1$ **do**
    $\theta = \theta + \alpha \bigtriangledown_\theta log\pi_\theta(s_t, a_t)v_t$
  end for
end for