This handout includes space for every question that requires a written response. Please feel free to use it to handwrite your solutions (legibly, please). If you choose to typeset your solutions, the —README.md— for this assignment includes instructions to regenerate this handout with your typeset LaTeX solutions.

2.a

2.b

2.c

$$
\begin{aligned}
V^{\pi}(s_0) - V^{\pi'}(s_0) &= \mathbb{E}_{\tau\sim\rho^{\pi}}\left[\sum_{t=0}^{\infty}\gamma^t\mathcal{R}(s_t,a_t)\right] - V^{\pi'}(s_0) \\
&= \mathbb{E}_{\tau\sim\rho^{\pi}}\left[\sum_{t=0}^{\infty}\gamma^t\left(\mathcal{R}(s_t,a_t) + V^{\pi'}(s_t) - V^{\pi'}(s_t)\right)\right] - V^{\pi'}(s_0) \\
&= \mathbb{E}_{\tau\sim\rho^{\pi}}\left[\sum_{t=0}^{\infty}\gamma^t\left(\mathcal{R}(s_t,a_t) + \gamma V^{\pi'}(s_{t+1}) - V^{\pi'}(s_t)\right)\right]
\end{aligned}
$$

3.a