b)

Value function:

$$V^* = [\,3{,}61\ ,4{,}8\ ,2{,}9\ ,3{,}8\ ,1{,}9\ ,1\ ,2\ ,0\ ]^T \in \mathbb{R}^8$$

Optimal feedback:

$v_k(\xi_1) = u_2$
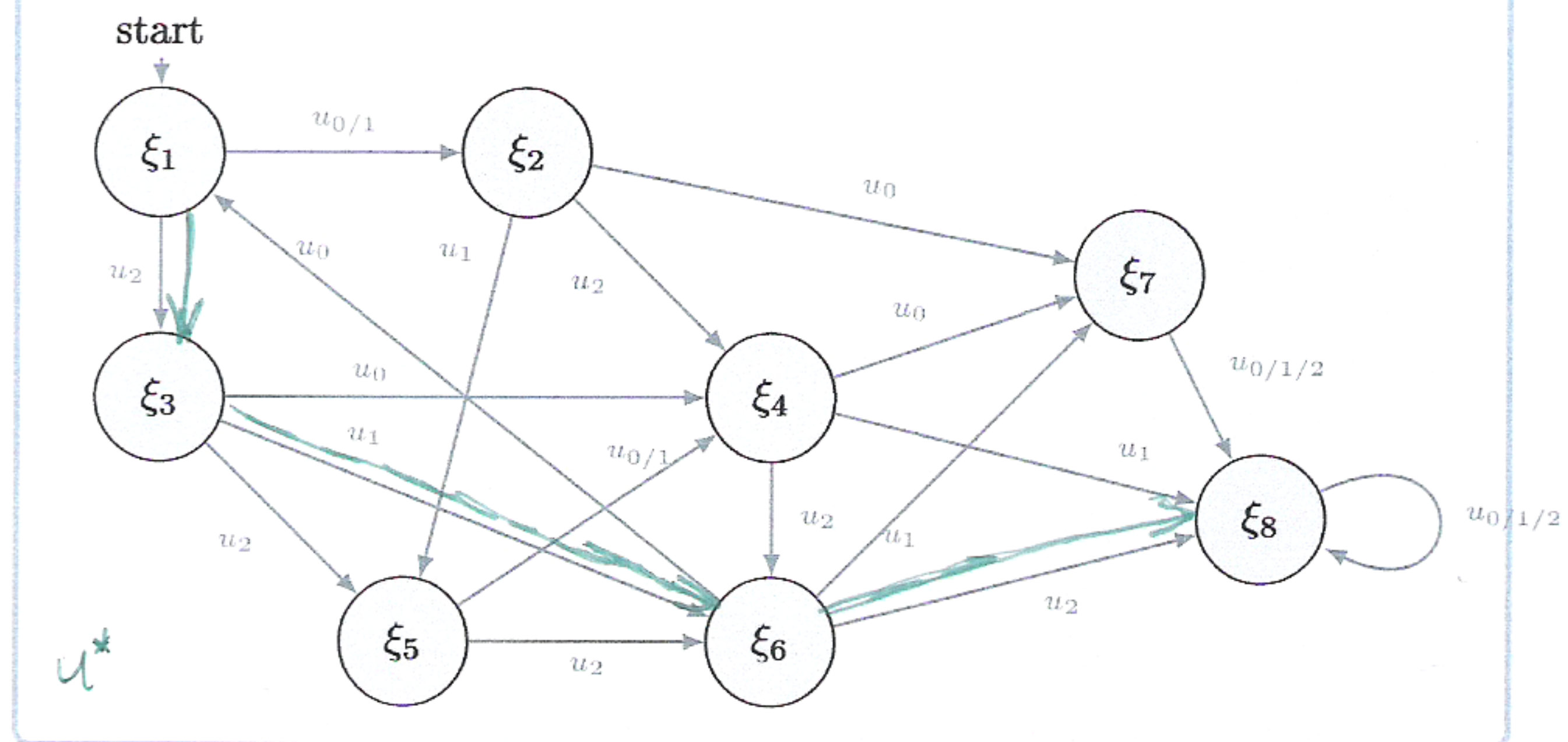$v_k(\xi_2) = u_1$
$v_k(\xi_3) = u_1$
$v_k(\xi_4) = u_1$
$v_k(\xi_5) = u_2$
$v_k(\xi_6) = u_2$
$v_k(\xi_7) = u_0$
$v_k(\xi_8) = u_0$

Optimal input sequence (draw the path):

c) No results have to be filled in.

d) No results have to be filled in.

2