putt ach: dQ = doy dW = 307du = dQ - dw= do - 30 =507 as It is a state variable the path take does not impact the charge in the value forpoth add: dU=507 dW=107 dQ=dU+dW=50+10=604 dW=-204 d U=-50% dQ = dU + dW = 50 - 20=-70/ Ua=07 $U_{\ell} = dU_{a \rightarrow \ell} - U_{a} = 50 - 0$ $= 50 \gamma$ $\mathcal{U}_{d} - \mathcal{U}_{a} = dQ_{ad} - d\mathcal{U}_{ad} \quad / \quad \forall o = dQ_{ad} - d\mathcal{V}_{ad} = dQ_{ad} - 10 + d\mathcal{U}_{ad}$