"ME-5427 Introduction to Turbomachinery"
"Zhaoyi Jiang(.1364)"

"HW1 P3"

"Inlet"
p1=84[bar]
t1=532[c]
v1=266[m/s]
h1=enthalpy(steam,p=p1,t=t1)
h01=h1+0.5*v1^2*convert(j,kj)
s1=entropy(steam,p=p1,t=t1)

"Exit"
p2=0.4[bar]
t2=82[c]
v2=50[m/s]
h2=enthalpy(steam,p=p2,t=t2)
h02=h2+0.5*v2^2*convert(j,kj)
s2s=s1
h2s=enthalpy(steam,p=p2,s=s2s)

"Work"
w_dot=h01-h02

"Efficiency"
eta=(h1-h2)/(h1-h2s)

SOLUTION
Unit Settings: SI C bar kJ mass deg

η = 0.7234	h01 = 3509 [kj/kg]	h02 = 2650 [kj/kg]
h1 = 3474 [kj/kg]	h2 = 2648 [kj/kg]	h2s = 2333 [kj/kg]
p1 = 84 [bar]	p2 = 0.4 [bar]	s1 = 6.8 [kj/kg-k]
s2s = 6.8 [kj/kg-k]	t1 = 532 [C]	t2 = 82 [C]
v1 = 266 [m/s]	v2 = 50 [m/s]	$\dot{w}$ = 859.7 [kj/kg]

No unit problems were detected.