EXAMPLE: Open system mixing

Air at T_a = 77°C, P_a = 1 bar and *molar* flow rate of $\dot{n}_a$ = 0.1 kmol/s enters an insulated mixing chamber. It mixes with water vapor at T_w = 277°C, P_w = 1 bar and *molar* flow rate of $\dot{n}_w$ = 0.3 kmol/s, with the mixture exiting at P_{mix} = 1 bar. If both air and water can be modeled as ideal gases with variable specific heats,

(a) find the temperature of the exiting mixture T_{mix} and
(b) the rate of entropy generation in the mixture.
(c) What is the source of entropy generation?