**Quiz 9**

**Chemical Engineering Thermodynamics**

**March 11, 2021**

In addition to the fugacity, the molar Gibbs free energy is equal between a liquid in equilibrium with a vapor. Consider a gas/liquid that follows the equation of state   
PV/RT = 1 + (b – a/T) P/(RTV) where b = 20 cm6/mole2; a = 40,000 cm6K/mole2; and CP = 41.8 + 0.084 T(K) J/mol-K.

The gas is under high pressure and is flashed into a flash tank making a liquid and vapor in equilibrium. If the initial fluid is at 5 MPa and 300K, what is the pressure and temperature of the resulting liquid/vapor mixture using the inlet stream as the reference?

 