

CHE 4426

Chpt 10 Problems

10.74

a) T

$\mu_i = \mu_i^\circ + RT \ln a_i$; if $a_i = 1$ then $\mu_i = \mu_i^\circ$
 (but it may not be possible to actually realize the standard state in an experiment)

b) F

Not necessarily. The activity might be 1 for some state that is not the standard state

c) T

$\ln x$ is not defined for $x < 0$

d) T

$a_i = \gamma_i m_i$ or $a_i = \gamma_i X_i$. The concentration cannot be negative and the activity cannot be negative so γ_i cannot be negative

e) F
 (optional)

$$\gamma_{\pm}^{\nu_+ + \nu_-} = \gamma_+^{\nu_+} \gamma_-^{\nu_-}$$

⊗

f) F

$\Delta G^\circ < 0$ or the salt will not dissolve, but if $\Delta H^\circ < 0$ (heat released when salt dissolves) then ΔS° can also be negative. This might happen if the ions were very strongly solvated, i.e., if the water molecules were very highly organized around the ions.