

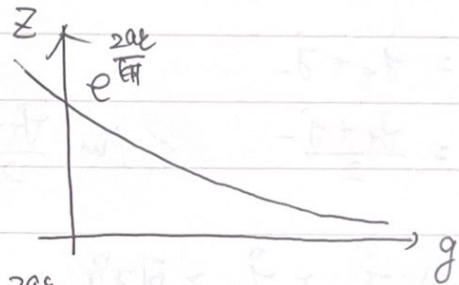
2012 秋 統計

$$(1) e^{-\frac{2\varepsilon}{kT}(a-g)} + e^{-\frac{\varepsilon}{kT}g} = e^{-\frac{\varepsilon}{kT}(-2a+2g-g)} = e^{-\frac{\varepsilon}{kT}(-2a+g)}$$

$$= e^{-\frac{\varepsilon}{kT}(-2a+g)} \quad e^{-\frac{2\varepsilon}{kT}(a-g)} + e^{-\frac{\varepsilon}{kT}g}$$

$$(2) \left(e^{-\frac{\varepsilon}{kT}} \right)^g e^{\frac{2a\varepsilon}{kT}}$$

$$e^{-\frac{\varepsilon}{kT}} \left(e^{2(a-g)} + e^g \right)$$



$$(3) F = -kT \log \left(e^{-\frac{\varepsilon}{kT}} \right)^g e^{\frac{2a\varepsilon}{kT}}$$

$$= \varepsilon \log e^{(-2a+g)} = (-2a+g) \varepsilon$$

$$F = -kT \log e^{-\frac{\varepsilon}{kT}} \left(e^{2(a-g)} + e^g \right)$$

$$= \varepsilon + -kT \log \left(e^{2(a-g)} + e^g \right)$$

~~$$= \varepsilon - kT \log e^g \left(e^{-3} + \right)$$~~