Exercise: Derivation of $\mathbb{E}\left[\log \pi_k\right]$ under a Dirichlet distribution

Show that

$$\exp(\mathbb{E}\left[\log \pi_k\right]) = \frac{\exp(\psi(\alpha_k))}{\exp(\psi(\sum_{k'} \alpha_{k'}))} \tag{1}$$

where $\boldsymbol{\pi} \sim \mathrm{Dir}(\boldsymbol{\alpha})$.