

### Exercise 1

Find the ratio of the probability of spontaneous emission to stimulated emission at 300 K for (a) microwave photons ( $h\nu/kT \gg 1$  Hz.) and (b) optical photons ( $\nu = 10^{13}$  Hz).

(Ans. (a)  $\nu = 10^{15}$  (b) 0.17.)