1. Let T be a bounded self-adjoint operator on a Hilbert space, and let $\lambda \in \rho(T)$. Show that

$$\|(T - \lambda I)^{-1}\| = \frac{1}{\operatorname{dist}(\lambda, \sigma(T))} \ ,$$

where $\operatorname{dist}(\lambda, \sigma(T)) = \inf\{|\lambda - \mu|;\ \mu \in \sigma(T)\}$.