8.9 Projection operators ♣.

Determine

$$A^{-1}A = \sum_{i,j} a_i^{-1} a_j \underbrace{P_i P_j}_{\delta_{ij}} = \sum_i a_i^{-1} a_i P_i = \sum_i P_i = 1.$$

This implies that one find simply the inverse of an operator O, if one can express O as $O = \sum_i c_i P_i$.