1. **10 points** Suppose that we have 8 women, and 15 men. One of the women is named Alice, and one of the men is named Bob. Suppose that we form a committee of 4 women and 6 men. What is the probability that Alice and Bob do not serve together? (To make sense of this, suppose that Alice and Bob do not get along. If they are not on the committee together, the committee will be a peaceful one. We are interested in the probability that the committee will be a peaceful one).
Answers

1.

\[ 1 - \left( \frac{\binom{7}{3}}{\binom{14}{5}} \right) \left( \frac{\binom{8}{4}}{\binom{15}{6}} \right). \]