

Problem 1

1. Compute $P(C_i)$:

$$P(\text{PlayTennis} = \text{Yes}) = 9/14$$

$$P(\text{PlayTennis} = \text{No}) = 5/14 = 0.357$$

2. Compute $P(X | C_i)$

$$P(\text{Outlook} = \text{Sunny} | \text{PlayTennis} = \text{Yes}) = 2/9$$

$$P(\text{Temperature} = \text{Cool} | \text{PlayTennis} = \text{Yes}) = 3/9$$

$$P(\text{Humidity} = \text{High} | \text{PlayTennis} = \text{Yes}) = 3/9$$

$$P(\text{Wind} = \text{Strong} | \text{PlayTennis} = \text{Yes}) = 3/9$$

$$P(X | \text{PlayTennis} = \text{Yes}) = 0.222 * 0.333 * 0.333 * 0.333$$

$$P(\text{Outlook} = \text{Sunny} | \text{PlayTennis} = \text{No}) = 3/5$$

$$P(\text{Temperature} = \text{Cool} | \text{PlayTennis} = \text{No}) = 1/5$$

$$P(\text{Humidity} = \text{High} | \text{PlayTennis} = \text{No}) = 4/5$$

$$P(\text{Wind} = \text{Strong} | \text{PlayTennis} = \text{No}) = 3/5$$

$$P(X | \text{PlayTennis} = \text{No}) = 0.600 * 0.200 * 0.800 * 0.600$$

3. Compute $P(X | C_i)P(C_i)$

$$P(X | \text{PlayTennis} = \text{Yes})P(\text{PlayTennis} = \text{Yes}) = 0.008 * 0.643$$

$$P(X | \text{PlayTennis} = \text{No})P(\text{PlayTennis} = \text{No}) = 0.0576 * 0.357$$

$$0.021 > 0.005$$

So more likely, will not play tennis.