

## Task 1.2

We are concerned about 3 cases:

Case 1: 4 correct

$$\binom{6}{4} = \text{drawn 4 from 6 correct}$$

$$\binom{49-6}{2} = \binom{43}{2} = \text{drawn 2 from 43 false}$$

Case 2: 5 correct

$$\binom{6}{5} = \text{drawn 5 from 6 correct}$$

$$\binom{49-6}{1} = \binom{43}{1} = \text{drawn 1 from 43 false}$$

Case 3: 6 correct

$$\binom{6}{6} = \text{drawn 6 from 6 correct}$$

$$\binom{49-6}{0} = \binom{43}{0} = \text{drawn no false}$$

We calculate  $P(|G \cap D|)$

$$\begin{aligned} & \frac{\overset{\text{case 1}}{\binom{6}{4}} \binom{43}{2} + \overset{\text{case 2}}{\binom{6}{5}} \binom{43}{1} + \overset{\text{case 3}}{\binom{6}{6}} \binom{43}{0}}{\binom{49}{6}} \\ &= \frac{15 \cdot 903 + 6 \cdot 43 + 1 \cdot 1}{1,3983816 \cdot 10^7} = 0,00099 \end{aligned}$$

## Task 1.3

1  $1 \cdot \frac{4}{6} \cdot \frac{3}{6} \cdot \frac{2}{6} = \frac{2}{9}$

2  $\prod_{i=1}^{30} \frac{i}{30} = 1,2883 \cdot 10^{-12}$

3  $\binom{200}{10} = 2,2451 \cdot 10^{16}$

4  $n^k = 32^{10}$