№31 (Исправление)

1а. $P = \frac{C_{13}^4}{C_{52}^4} = \frac{13!/(4!\cdot 9!)}{52!/(4!\cdot 48!)} = \frac{715}{270725} = 0.002641$

$52\cdot 51\cdot 50\cdot 49$

1б. $P = P_{1T} + P_{2T} + P_{3T} + P_{4T}$

Ровно 1 туз

$= \boxtimes\square\square\square = \frac{1}{52}\cdot\frac{50}{51}\cdot\frac{49}{50}\cdot\frac{48}{49}$

$+ \square\boxtimes\square\square = \frac{51}{52}\cdot\frac{1}{51}\cdot\frac{49}{50}\cdot\frac{48}{49}$

$+ \square\square\boxtimes\square = \frac{51}{52}\cdot\frac{50}{51}\cdot\frac{1}{50}\cdot\frac{48}{49}$

$+ \square\square\square\boxtimes = \frac{51}{52}\cdot\frac{50}{51}\cdot\frac{49}{50}\cdot\frac{1}{49}$

$= \frac{48}{52\cdot 51} + \frac{48}{52\cdot 50} + \frac{48}{52\cdot 49} + \frac{1}{52} = \frac{1}{52}\left(\frac{48}{51} + \frac{48}{50} + \frac{48}{49} + 1\right)$

$P_{1T} = 0.07463$

Ровно 2 туза

$\boxtimes\boxtimes\square\square = \frac{1}{52}\cdot\frac{1}{51}\cdot\frac{49}{50}\cdot\frac{48}{49} = \frac{49\cdot 48 + 50\cdot 48 + 50\cdot 49 + 51\cdot 48 + 51\cdot 49 + 51\cdot 50}{52\cdot 51\cdot 49\cdot 48}$

$\boxtimes\square\boxtimes\square = \frac{1}{52}\cdot\frac{50}{51}\cdot\frac{1}{50}\cdot\frac{48}{49}$

$\boxtimes\square\square\boxtimes = \frac{1}{52}\cdot\frac{50}{51}\cdot\frac{49}{50}\cdot\frac{1}{49}$

$\square\boxtimes\boxtimes\square = \frac{51}{52}\cdot\frac{1}{51}\cdot\frac{1}{50}\cdot\frac{48}{49}$

$\square\boxtimes\square\boxtimes = \frac{51}{52}\cdot\frac{1}{51}\cdot\frac{49}{50}\cdot\frac{1}{49}$

$\square\square\boxtimes\boxtimes = \frac{51}{52}\cdot\frac{50}{51}\cdot\frac{1}{50}\cdot\frac{1}{49}$

$P_{2T} = 0.002262$

Ровно 3

$\boxtimes\boxtimes\boxtimes\square = \frac{1}{52}\cdot\frac{1}{51}\cdot\frac{1}{50}\cdot\frac{48}{49}$

$\boxtimes\boxtimes\square\boxtimes = \frac{1}{52}\cdot\frac{1}{51}\cdot\frac{49}{50}\cdot\frac{1}{49}$

$\boxtimes\square\boxtimes\boxtimes = \frac{1}{52}\cdot\frac{50}{51}\cdot\frac{1}{50}\cdot\frac{1}{49}$

$\square\boxtimes\boxtimes\boxtimes = \frac{51}{52}\cdot\frac{1}{51}\cdot\frac{1}{50}\cdot\frac{1}{49}$

$P_{3T} = \frac{48+49+50+51}{52\cdot 51\cdot 50\cdot 49} = 0.000\,03047$

Ровно 4

$\boxtimes\boxtimes\boxtimes\boxtimes = \frac{1}{52}\cdot\frac{1}{51}\cdot\frac{1}{50}\cdot\frac{1}{49}$

$P_{4T} = 0,000\,000\,1539$

$P = 0.07692 = 1/13$

2. $C_{10}^{3} = \frac{10!}{3! \cdot 7!} = \frac{8 \cdot 9 \cdot 10}{6} = 120$

$P = 1/120 \approx 0.0083$

3. $C_{9}^{3} = 84$; $C_{15}^{3} = 455$

$P = \frac{C_9^3}{C_{15}^3} = 0.1846$

4. $P = \frac{1}{C_{100}^{2}} = \frac{1}{4950} = 0.000\,202\,0$