Solution for exercise 1.6.1 in Pitman

This is another version of the birthday problem. We denote the event that the first n persons are born under different signs, exactly as in example 5 page 62. Correspondingly, R_n denotes the event that the n'th person is the first person born under the same sign as one of the previous $n - 1$ persons. We find

$$P(D_n) = \prod_{i=1}^{n} \left(1 - \frac{i-1}{12} \right), \qquad n \le 13$$

We find $P(D_4) = 0.57$ and $P(D_5) = 0.38$.