## Exercice 19

$\Omega$ : "main de 5 cartes"

$|\Omega| = C_{32}^{5}$

$X$ : nb de coeur dans la main

$X(\Omega) = [\![0, 5]\!]$

① $X = 0$

$$p(X=0) = \frac{C_{24}^{5}}{C_{32}^{5}} = \frac{42\,504}{201\,376} \simeq 0,21$$

② $$P(X=1) = \frac{C_{8}^{1} \times C_{24}^{4}}{C_{32}^{5}} = \frac{85\,008}{|\Omega|} \simeq 0,42$$

③ $$P(X=2) = \frac{C_{8}^{2} \times C_{24}^{3}}{C_{32}^{5}} = \frac{56\,676}{|\Omega|} \simeq 0,28$$

④ $$P(X=3) = \frac{C_{8}^{3} \times C_{24}^{2}}{C_{32}^{5}} = \frac{15\,456}{|\Omega|} = 0,077$$

⑤ $$P(X=4) = \frac{C_{8}^{4} \times C_{24}^{1}}{C_{32}^{5}} = \frac{1\,680}{|\Omega|} = 0,0083$$

⑥ $$P(X=5) = \frac{C_{8}^{5}}{C_{32}^{5}} = \frac{56}{|\Omega|} = 0,00028$$

Rq : $\sum_{i=0}^{n} P(X=i) = 1$

$$P(X=i) = \frac{C_{8}^{i} \times C^{5-i}}{C_{32}^{5}}$$