5.4.2 Exponential Ranking

$$Q \quad P_{exp-rank}(i) = \frac{1-e^{-i}}{c}$$

指数级增大的p

Individual	fitness	Rank	$P_{sel\ FP}$	$P_{sel\ EX}$
A	1	0	0.1	0
B	4	1	0.4	0.422
C	5	2	0.5	0.578
Sum	10		1.0	1.0

Solution ① calculate C : make sure the sum of properbility equal to 1

$$C = \sum_{i=0}^{2} (1-e^{-i}) = (1-e^0) + (1-e^{-1}) + (1-e^{-2})$$

$$= 0 + 0.6321 + 0.8647 = 1.4968$$

② calculate P

$$P(0) = \frac{1-e^0}{c} = 0$$

$$P(1) = \frac{1 - e^1}{c} = \frac{0.6321}{1.4968} = 0.422$$

$$P(2) = \frac{1 - e^2}{c} = \frac{0.8647}{1.4968} = 0.578$$