1. Which statement best describes the Moran process?

   ○ The Moran process models how a population evolves by replacing multiple individuals at each step based on a fitness-weighted lottery.

   ○ The Moran process describes the evolution of a population where all individuals reproduce simultaneously, and their offspring compete for a limited number of vacant spots.

   ○ The Moran process assumes that individuals reproduce at rates inversely proportional to their fitness, leading to the eventual extinction of the fittest strategy.

   ○ The Moran process models evolutionary dynamics in a finite population where individuals are chosen for reproduction proportional to their fitness, and the offspring replace a randomly selected individual.

2. What is the probability of selection of each type in the Moran Process with a population vector $v = (3, 2, 4)$ for the following payoff matrix:

$$\begin{pmatrix} 1 & 15 & 1 \\ 4 & 10 & 2 \\ 2 & 9 & 8 \end{pmatrix}$$

   ○ First type: 3/10, second type: 1/6, third type: 8/15.
   ○ First type: 2/5, second type: 1/6, third type: 13/30.
   ○ First type: 1/3, second type: 1/3, third type: 1/3.
   ○ First type: 1/5, second type: 2/5, third type: 4/5.

3. What is the probability of fixation x_1 for the following game:

$$\begin{pmatrix} 1 & 9 \\ 4 & 8 \end{pmatrix}$$

   ○ 1/5
   ○ 12/43
   ○ 1/4
   ○ 22/7