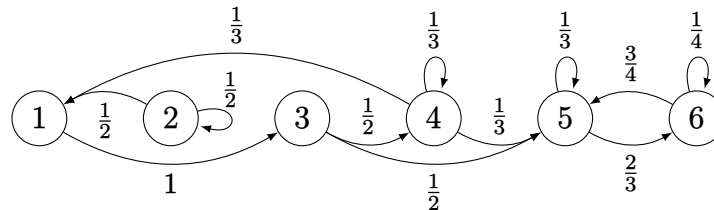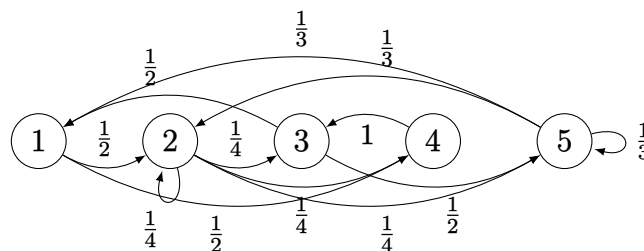Student Number: ▓▓▓▓▓   Name: Bryan Hoang

1. (4 points) **Answer:**

One should note that for a finite Markov chain, non-closed communicating classes are transient, while closed ones are recurrent.

Part 1. (P_1)

Figure 1: State transition diagram for P_1

From Figure 1, the communicating classes are

$C_1 = \{1, 3, 4\}$	which is transient
$C_2 = \{2\}$	which is transient
$C_3 = \{5, 6\}$	which is recurrent

Part 2. (P_2)

Figure 2: State transition diagram for P_2

From Figure 2, the single communicating class is

$C_1 = \{1, 2, 3, 4, 5\}$	which is recurrent