Question 1

1\ 2	x	y	z
a	2,5	2,1	0,1
b	3,2	4,4	1,1
c	1,0	1,1	1,2

Find the strictly dominant strategies (there may be zero, one or more):

- [ ] 1) a;
- [ ] 2) b;
- [ ] 3) c;
- [ ] 4) x;
- [ ] 5) y;
- [ ] 6) z;

Question 2

1\ 2	x	y	z
a	2,5	2,1	0,1
b	3,2	4,4	1,1
c	1,0	1,1	1,2

Find the weakly dominated strategies (there may be zero, one or more):

- [ ] 1) a;
- [ ] 2) b;
- [x] 3) c;
- [ ] 4) x;
- [ ] 5) y;
- [ ] 6) z;

Question 3

1\ 2	x	y	z
a	2,5	2,1	0,1
b	3,2	4,4	1,1
c	1,0	1,1	1,2

Which strategies survive the process of iterative removal of strictly dominated strategies (there may be zero, one or more)?

- [ ] 1) a;
- [x] 2) b;
- [x] 3) c;
- [ ] 4) x;
- [x] 5) y;
- [x] 6) z;

Question 4

1\ 2	x	y	z
a	2,5	2,1	0,1
b	3,2	4,4	1,1
c	1,0	1,1	1,2

Find all strategy profiles that form pure strategy Nash equilibria (there may be zero, one or more):

- [ ] 1) (a, x);
- [ ] 2) (a, y);
- [ ] 3) (a, z);
- [ ] 4) (b, x);
- [x] 5) (b, y);
- [ ] 6) (b, z);
- [ ] 7) (c, x);
- [ ] 8) (c, y);
- [x] 9) (c, z).

Question 5

1\ 2	y	z
b	4,4	1,1
c	1,1	2,2

Which of the following strategies form a mixed strategy Nash equilibrium? (p corresponds to the probability of 1 playing b and $1-p$ to the probability of playing c; q corresponds to the probability of 2 playing y and $1-q$ to the probability of playing z).

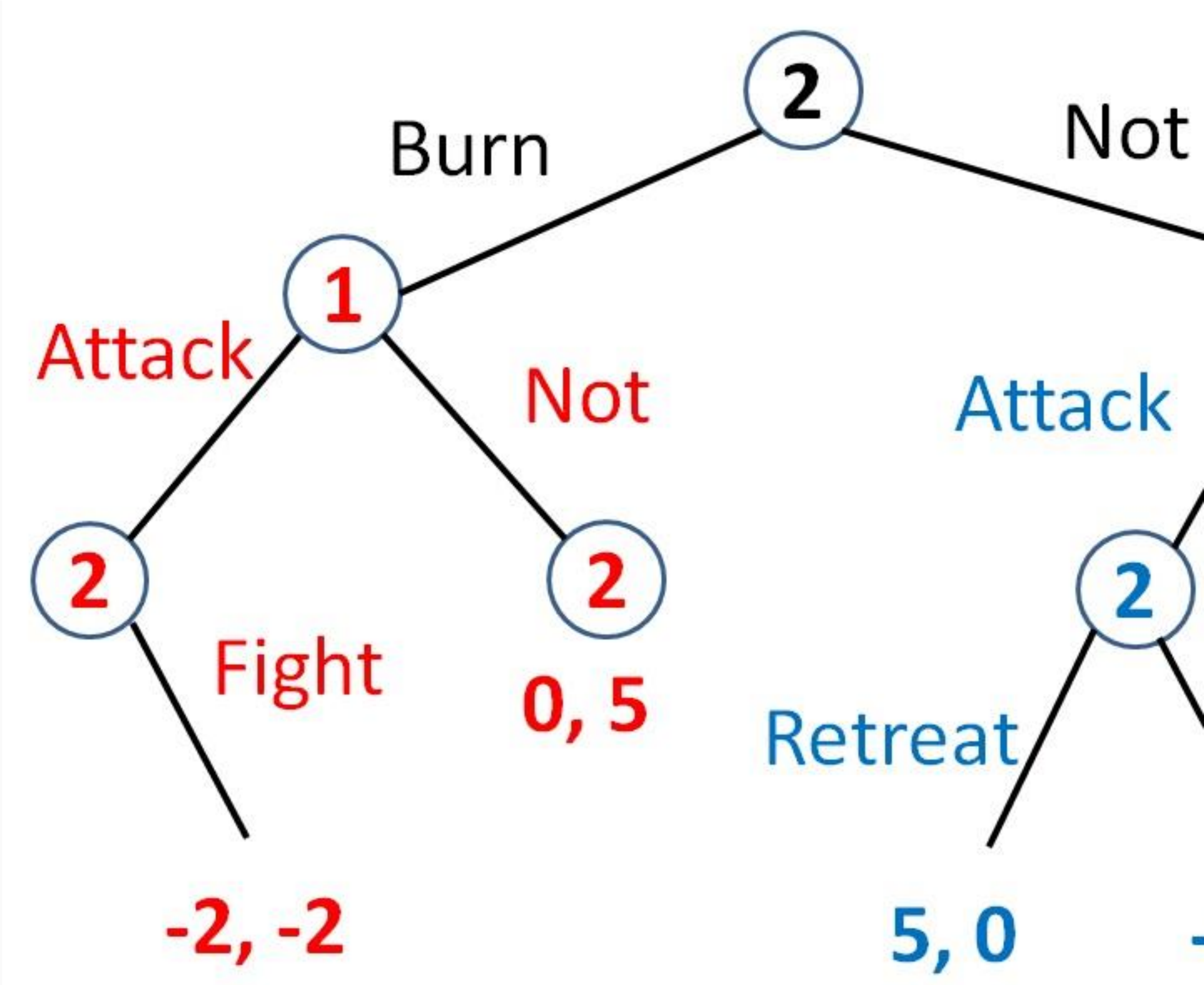
- ( ) 1) $p=1/3$, $q=1/3$;
- ( ) 2) $p=1/3$, $q=1/4$;
- ( ) 3) $p=2/3$, $q=1/4$;

4) p=1/4, q=1/4;

Question 6

Burning the Bridge

- One island is occupied by Army 2, and there is a bridge connecting the island to the mainland through which Army 2 could retreat.
- Stage 1: Army 2 could choose to burn the bridge or not in the very beginning.
- Stage 2: Army 1 then could choose to attack the island or not.
- Stage 3: Army 2 could then choose to fight or retreat if the bridge was not burned, and has to fight if the bridge was burned.



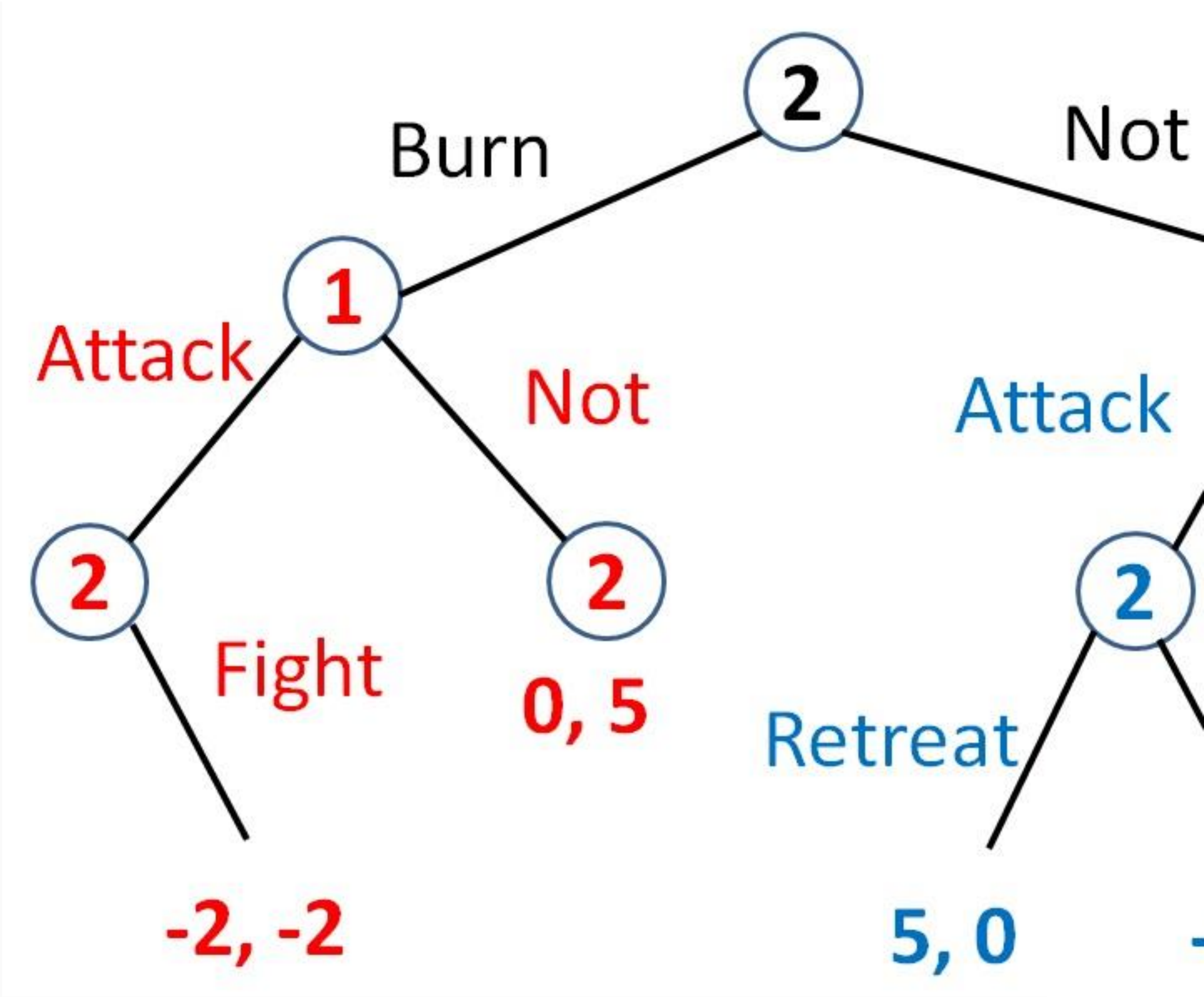
First, consider the blue subgame. What is a subgame perfect equilibrium of the blue subgame?

- a) (Attack, Fight).
- b) (Attack, Retreat).
- c) (Not, Fight).
- d) (Not, Retreat).

Question 7

Burning the Bridge

- One island is occupied by Army 2, and there is a bridge connecting the island to the mainland through which Army 2 could retreat.
- Stage 1: Army 2 could choose to burn the bridge or not in the very beginning.
- Stage 2: Army 1 then could choose to attack the island or not.
- Stage 3: Army 2 could then choose to fight or retreat if the bridge was not burned, and has to fight if the bridge was burned.



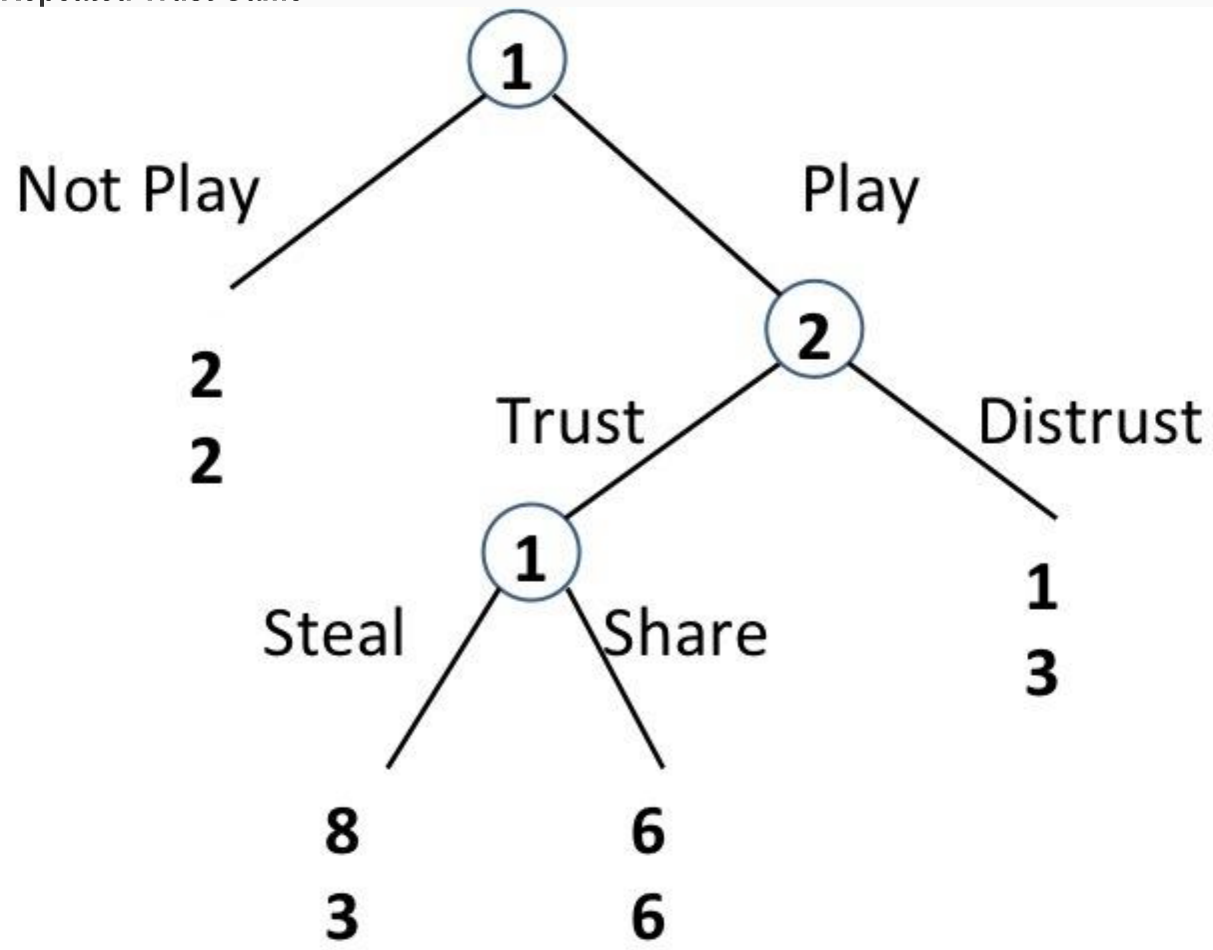
What is the outcome of a subgame perfect equilibrium of the whole game?

- [ ] a) Bridge is burned, 1 attacks and 2 fights.
- [x] b) Bridge is burned, 1 does not attack.
- [ ] c) Bridge is not burned, 1 attacks and 2 retreats.

d) Bridge is not burned, 1 does not attack.

Question 8

Repeated Trust Game



There is a probability p that the game continues next period and a probability $(1-p)$ that it ends. What is the threshold p_* such that when $p \geq p_*$ ((Play,Share), (Trust)) is sustainable as a subgame perfect equilibrium by a grim trigger strategy, but when $p < p_*$ ((Play,Share), (Trust)) can't be sustained as a subgame perfect equilibrium? [Here a trigger strategy is: player 1 playing Not play and player 2 playing Distrust forever after a deviation from ((Play,Share), (Trust)).]

- a) 1/2;
- b) 1/3;
- c) 2/3;
- d) 1/4.

Question 9

Friend or Foe

- There are two players.
- The payoffs to player 2 depend on whether 2 is a friendly player (with probability p) or a foe (with probability $1-p$).
- Player 2 knows if he/she is a friend or a foe, but player 1 doesn't know.

See the following payoff matrices for details.

Friend	Left	Right
Left	3,1	0,0
Right	2,1	1,0

with probability p

Foe	Left	Right
Left	3,0	0,1
Right	2,0	1,1

with probability $1-p$

When $p=1/4$, which is a pure strategy Bayesian equilibrium: (1's strategy; 2's type - 2's strategy)

- ○ a) (Left ; Friend - Left, Foe - Right);
- ◉ b) (Right ; Friend - Left, Foe - Right);
- ○ c) (Left ; Friend - Left, Foe - Left);
- ○ d) (Right ; Friend - Right, Foe - Right);

Question 10

Entry Game

Player 1 is a company choosing whether to enter a market or stay out;

- If 1 stays out, the payoff to both players is (0, 3).

Player 2 is already in the market and chooses (simultaneously) whether to fight player 1 if there is entry

- The payoffs to player 2 depend on whether 2 is a normal player (with prob $1-p$) or an aggressive player (with prob p).

See the following payoff matrices for details.

Aggressive	Fight	Not
Enter	-1,2	1,-2
Out	0,3	0,3

with probability p

Normal	Fight	Not
Enter	-1,0	1,2
Out	0,3	0,3

with probability $1-p$

Player 2 knows if he/she is normal or aggressive, and player 1 doesn't know. Which is true (there may be zero, one or more):

☑ a) When $p>1/2$, it is a Bayesian equilibrium for 1 to stay out, 2 to fight when aggressive and not when normal;

☑ b) When $p=1/2$, it is a Bayesian equilibrium for 1 to stay out, 2 to fight when aggressive and not when normal;

☑ c) When $p=1/2$, it is a Bayesian equilibrium for 1 to enter, 2 to fight when aggressive and not when normal;

☑ d) When $p<1/2$, it is a Bayesian equilibrium for 1 to enter, 2 to fight when aggressive and not when normal.