CSE 5319/6319 Homework 3

Due April 3, 5:00 p.m. on Canvas

1. Show that the following instance of stable marriages has two stable matchings:

A	B	C	D	E		1	2	3	4	5
5	2	3	3	3		A	E	A	B	B
1	3	5	2	1		D	B	B	D	E
3	5	4	4	2		C	A	C	A	C
4	4	1	5	4		B	C	E	E	A
2	1	2	1	5		E	D	D	C	D

2. Find as many maximum-cardinality, pareto-optimal solutions as you can for the following instance of house allocation:

```
A1: H4 H5 H2 H1 H3

A2: H2 H5 H4 H3 H1

A3: H1 H4 H2 H3 H5

A4: H4 H2 H1 H5 H3

A5: H3 H2 H4 H1 H5
```

3. A man dies, leaving an estate worth $600. The deceased has three widows with marriage contracts of $150, $250, and $350. Divide the estate among the widows, using the Rule of Linked Vessels.

4. Solve problem 3 using the O'Neill's law/race-to-the-bank method (Shapley Value).

5. A man dies, leaving an estate worth $250. The deceased has three widows with marriage contracts of $50, $100, and $200. Divide the estate among the widows, using the Rule of Linked Vessels.

6. Solve problem 5 using the O'Neill's law/race-to-the-bank method (Shapley Value).