

Name: \_\_\_\_\_

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1. Alice and Bob has several apples and bananas and they want to split these fruits. Both of them like both fruits, but value them differently. For Alice, 1 apple is exactly equivalent to 2 bananas. For Bob, 2 apples are exactly equivalent to 1 banana.

Show that the way to split all the fruits is Pareto optimal if and only if

- either Alice has no bananas
- or Bob has no apples.

<b>Solution:</b>
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2. Let us consider a modified game of Nim: on each turn a player may remove some number of pebbles from one pile or split this pile into two piles. Compute the Grundy function for this game for all the initial states with one pile.

<b>Solution:</b>
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