Practice problem

The National Parks Service is receiving four bids for logging at three pine forests in Arkansas. The three locations include 10,000, 20,000, and 30,000 acres, respectively. A single bidder can bid for at most 50% of the total acreage available. The bids per acre at the three locations are given in the following table:

<table>
<thead>
<tr>
<th>Location</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bidder 1</td>
<td>$520</td>
<td>$210</td>
<td>$570</td>
</tr>
<tr>
<td>Bidder 2</td>
<td>−</td>
<td>$510</td>
<td>$495</td>
</tr>
<tr>
<td>Bidder 3</td>
<td>$650</td>
<td>−</td>
<td>$240</td>
</tr>
<tr>
<td>Bidder 4</td>
<td>$180</td>
<td>$430</td>
<td>$710</td>
</tr>
</tbody>
</table>

Bidder 2 does not wish to bid on location 1, and bidder 3 cannot bid on location 2.

Determine the allocation of forests to bidders that maximizes the total bidding revenue.
What to do:

1. Identify what type of the problem you are facing here
2. Verify that you have all the relevant data
3. Identify a procedure that you can apply to solve the problem
4. Bring the problem in the form required by the procedure
5. Apply the procedure to solve the problem