1 (a) let x\_1 be how many sqkm of wheat, x\_2 for barley.

Max x\_1 (S\_1) + x\_2 (S\_2) // say profit = revenue (gg accounting), and fertilizer and insecticide free

s.t. x\_1 + x\_2 = L

F\_1 x\_1 + F\_2 x\_2 <= F

P\_1 x\_1 + P\_2 x\_2 <= P

all x >= 0

(b) 12 (6,6)

2(a)

(remember to explain used symbols)

z = c\_B^T B^{-1} b (at optimality we don’t care about the second – r x\_N)

x\_B = B^{-1} b

r = (c\_N – N^T B^{-T} c\_B)^T

\Pi = B^{-T} c\_B

(b) (c) TODO

3 <OUT OF SYLLABUS>

4 (a)

0-sum (one player’s loss is the other’s gain)

|  |  |  |
| --- | --- | --- |
|  | 1 | 2 |
| 1 | 1 | -1 |
| 2 | -1 | 1 |

(b) no, no dominated strategies

(c) No. show working to show no Nash eqlbm

(d) Yes (strong duality & minimax theorem)

(e) Many examples in tutorials