HW 11.3

Wednesday, October 21, 2020 7:00 PM

Passed Solution review

3. Consider another version of the lobbying game introduced in this chapter. Suppose the payoffs are the same as presented earlier, except in the case in which firm X lobbies and firm Y does not lobby. In this case, suppose the government's decision yields x to firm X and zero to firm Y. Assume that $x > 25$. The normal form of this game is pictured here.

X \ Y	L	N
L	−5, −5	x−15, 0
N	0, 15	10, 10

10

p

1-p

q 1-q

(a) Designate the (pure-strategy) Nash equilibria of this game (if it has any).

(N,L) and (L,N)

(b) Compute the mixed-strategy Nash equilibrium of the game.

$-5q + (x-15)(1-q) = 10-10q \rightarrow q = (25-x)/(20-x)$

$-5p + 15 - 15p = 10 - 10p$

$15 - 20p = 10 - 10p$

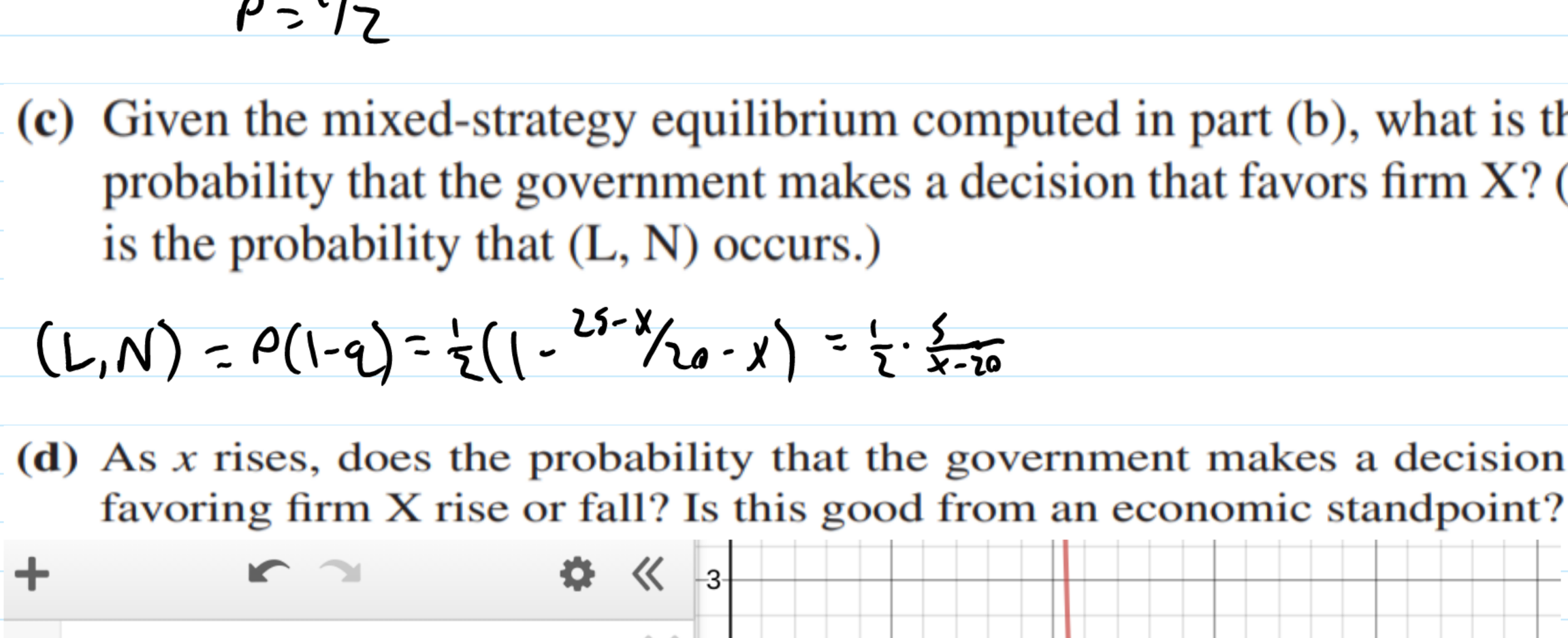
$5 = 10p$

$p = 1/2$

(c) Given the mixed-strategy equilibrium computed in part (b), what is the probability that the government makes a decision that favors firm X? (It is the probability that (L, N) occurs.)

$(L,N) = p(1-q) = \frac{1}{2}\left(1 - \frac{25-x}{20-x}\right) = \frac{1}{2} \cdot \frac{5}{x-20}$

(d) As x rises, does the probability that the government makes a decision favoring firm X rise or fall? Is this good from an economic standpoint?



as x increases, the probability decreases. After 20, (L,N) becomes better