chapter 7 - U1

Date

(a)

		Defense: q	Defense: 1-q
		Anticipate Run	Anticipate Pass
Offense	Run: p	1, (-1)	(5), -5
	Pass: 1-p	(9), -9	-3, (3)

⇒ Best-response 分析結果證實不存在 pure-strategy Nash equilibrium

(b) $-p-9(1-p) = -5p+3(1-p) \Rightarrow p = \frac{3}{4}$

$q+5(1-q) = 9q-3(1-q) \Rightarrow q = \frac{1}{2}$

The mixed-strategy Nash equilibrium is:

Offense play is ($\frac{3}{4}$ Run + $\frac{1}{4}$ Pass)

Defense play is ($\frac{1}{2}$ anticipate Run + $\frac{1}{2}$ anticipate Pass)

(c) Because the payoffs are different, the offense may choose the mixture different from it's opponent (the Defense).

(d) $1(\frac{1}{2}) + 5(1-\frac{1}{2}) = 3$

offense's expected payoff is 3

Chapter 7 - 12

Date / /

Content:

		Student: q	Student: 1-q
		Work and ask for help	Stack and finish for hints
Professor	Help student	3, 3	-1, 4
	Ignore e-mail	-2, 1	0, 0

(a) $3p+(1-p)=4p+0(1-p) \Rightarrow p=\frac{1}{2}$

$3q+(-1)(1-q)=-2q+0(1-q) \Rightarrow q=\frac{1}{6}$

The mixed strategy Nash equilibrium is

professor play is ($\frac{1}{2}$ help + $\frac{1}{2}$ Ignore)

Student play is ($\frac{1}{6}$ work + $\frac{5}{6}$ stack)

(b) The professor's expected payoff is $-2 \times \frac{1}{6} = -\frac{1}{3}$

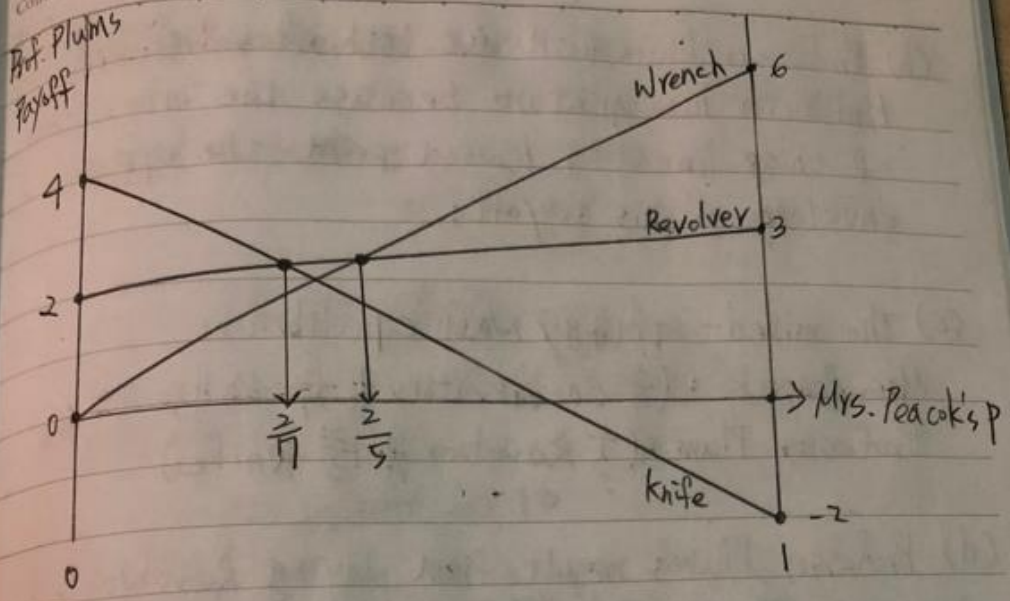
The student's expected payoff is $4 \times \frac{1}{2} = 2$

chapter 7-09

Date / /

M T W T F S S

Content: (a)



$3p + 2(1-p) = -2p + 4(1-p)$

$3p + 2 - 2p = -2p + 4 - 4p$

$p + 2 = -6p + 4$

$7p = 2$

$p = \frac{2}{7}$

$3p + 2(1-p) = 6p$

$p + 2 = 6p$

$5p = 2$

$p = \frac{2}{5}$

Date / /

Content:

(b) Professor Plum will use both Revolver and Knife in his mixture because the intersection of those lines is lowest point the upper envelope of his payoffs.

(c) The mixed-strategy Nash equilibrium

Mrs. Peacock : ($\frac{2}{7}$ Conservatory + $\frac{5}{7}$ Ballroom)

Professor Plum : ($\frac{1}{3}$ Revolver + $\frac{2}{3}$ Knife)

(d) Professor Plum's result from playing Revolver when Mrs. Peacock plays Ballroom is currently 2 rather than 1, 因 payoff 不同, 因此影響到不同的 mixed strategy

Chapter 8 - Q3

Date / /

Content: M T W T F S S

(a) 合格的工人 = $100 - \frac{n^2}{2} > 10$

$\Rightarrow n^2 < 180$ or $n \leq 13$

不合格的工人 = $100 - n^2 < 10$

$\Rightarrow n^2 > 90$ or $n \geq 10$

所以 n 的範圍為 $10 \leq n \leq 13$, n 最小值為 10,

合格的工人 payoff 為 $100 - \frac{10^2}{2} = 50$,

不合格的工人的 payoff 為 10

(b) 如果信號不可用的狀況下,

The expect output on a good job is $0.6 \times 100 + 0.4 \times 0 = 60$

bad job is $0.6 \times 10 + 0.4 \times 10 = 10$

由上可知公司會付 60 units 給從事 good job 的工人,

但不管工人是否有合格, 從事 bad job 預期產出都是

10 units, 因此公司會付 10 units 給從事 bad job 的工人,

但因兩種 job 都有足夠的需求, 所有工人會選擇

good job, 沒人願意選擇 bad job, 因此在信號

不可用的狀況下, 公司會給每個工人 60 units,

由 (a) 可知在信號不可用的狀況下, 兩種工人的

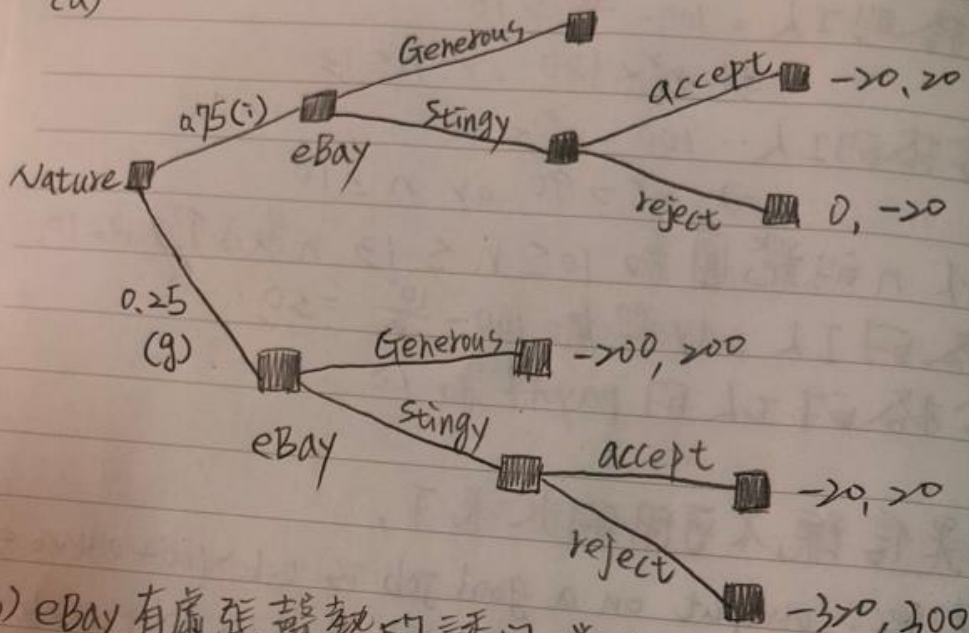
payoff 都增加

chapter 8 - U8

Date / /

Content:

(a)



(b) eBay 有虛張聲勢的誘因，當他在有罪的情況下，提出小額的和解方案(S)，但是 AT&T 不知道 eBay 是無辜或有罪且虛張聲勢，假如 AT&T 決定接受小額的和解方案(S)，那虛張聲勢的 eBay 可節省大量的金錢

(c)

		AT&T	
		Accept	Reject
eBay	Sifi, Sifg (ss)	-20, 20	-80, 60
	Sifi, Gifg (sG)	-65, 65	-50, 35
	Gifi, Sifg (Gs)	-155, 155	-230, 225
	Gifi, Gifg (GG)	-200, 200	-200, 200

策略 Gs 和 GG 被策略 ss 和 sG 支配，因此得以下 table

		AT&T	
		Accept	Reject
eBay	Sifi, Sifg (ss)	-20, 20	-80, 60
	Sifi, Gifg (sG)	-65, 65	-50, 35

There is no pure-strategy Nash equilibrium.

The mixed-strategy Nash equilibrium occurs when eBay plays ss with (ss) $p=\frac{2}{7}$ and AT&T (Accept) $q=\frac{2}{5}$

Expected off:

eBay payoffs $= -20\times\frac{2}{5}+(-80)\times\frac{3}{5}=-56$ million

AT&T payoffs $= 20\times\frac{2}{7}+65\times\frac{4}{7}=\frac{320}{7}\approx 45.7$ million