[redacted]

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U1

(a)

		q DEFENSE Anticipate Run	1-q Aticipate pass
p	RUN	1 , -1	5 , -5
OFFENSE 1-p	PASS	9 , -9	-3 , 3

No Pure-strategy Nash equilibrium.

(b) $-p-9(1-p) = -5p+3(1-p)$ $p=\frac{3}{4}$, $q=\frac{1}{2}$

$q+5(1-q)=9q-3(1-q)$

The mix-strategy Nash equilibrium.

OFFENSE $3/4$ (Run) $+\frac{1}{4}$ (pass)

DEFENSE $1/2$ (Anticipate Run) $+ 1/2$ (Anticipate pass)

(c)

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

(d) $1\times 1/2 + 5\times(1\times 1/2)=3$

U2

		q S Work ask	1-q slack fish
P p	Help	3 , 3	-1 . 4
1-p	Ignore	-2 , 1	0 . 0

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

$3q-(1-q)=-2q$ $q=1/6$

mixed-strategy N.E

P : $\frac{1}{2}$(Help student)$+1/2$(Ignore E-mai

S : $1/6$ (work and ask) $+5/6$ (slack and fishing)

(b) prof's payoff $= -2\cdot\frac{1}{6} = \frac{-1}{3}$

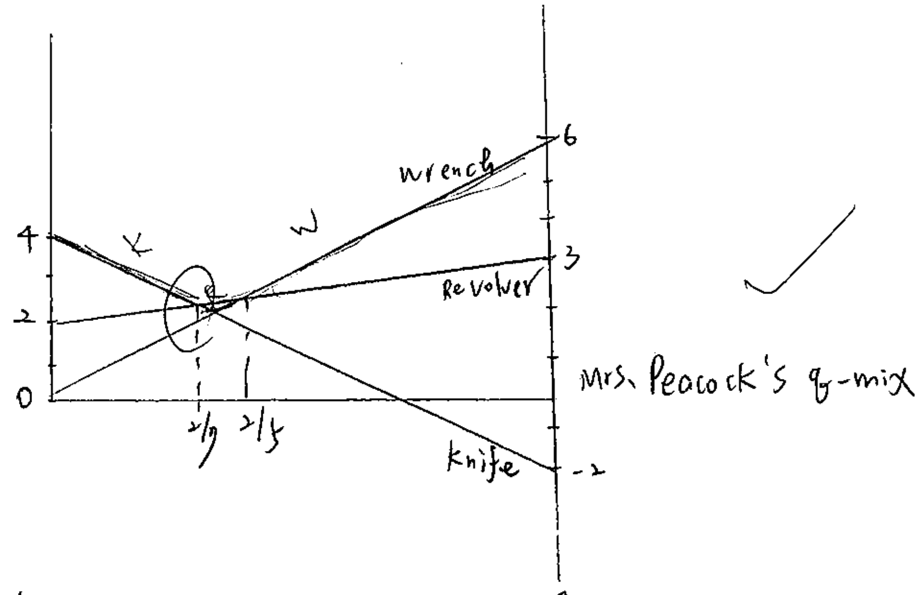
Student's payoff $= 4\times\frac{1}{2} = 2$

U9.

(a)

		q_1 Revolver	q_2 Knife	$1-q_1-q_2$ Wrench	
p	Conservatory	1, 3	2, -2	0, 6	q_1+2q_2
Mrs. Peacock 1-p	Ballroom	3, 2	1, 4	5, 0	$3q_1+q_2+5(1-q_1-q_2)$

Professor Plum



(b) Professor plum will use Resolver and knife in his equilibrium mixture, because the interesction of these two stratgies are the lowest.

(c)

Remove "wrench"

		q	$1-q$	
	p	1.3	2.-2	$q+2(1-q)$
	$1-p$	3.2	1.4	$3q+1\cdot q$
		$3p+2(1-p)$	$-2p+4(1-p)$	

$q = 1/3$

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

The mix-strategy N.E

Mrs. P $\frac{2}{7}$(con) $+\frac{5}{7}$(B)

Professor P $\frac{1}{3}$(R) $+\frac{2}{3}$(kn)

U12.

(a)

		D: q sw	$1-q$ st
J	p sw	0, 0	-1, k
	$1-p$ st	k, -1	-10, -10

$p = 9/k+9$

$q = 9/k+9$

k increase, both of them still have the same frequency on play swerve #

-2

(b)

James' payoff : $-1+q \Rightarrow \frac{-k-9+9}{k+9} = \frac{-k}{k+9}$

Dean's payoff : $-1+p \Rightarrow \frac{-k}{k+9}$

(c) k must be 9 for both James and Dean to mix 50-50 in the mixed-strategy equilibrium.

(d) K must be greater than 1 under the alternative scheme. Any value greater than 1 would lead to positive expected payoffs for both players.