Dee's Pizzeria

		Enter	Stay Out
	Advertise	$50, −$2	$175, $0
Patrick's Pie	Do Not Advertise	$150, $15	$100, $0

3. Patrick's Pie is currently the only pizzeria in College Town. It can either advertise or not advertise. Dee's Pizzeria is contemplating whether to enter or stay out of the College Town market. Each pizza establishment independently and simultaneously makes its decision. The payoff matrix above shows the profits for each combination of decisions, and both players have complete information. The first entries in the payoff matrix are Patrick's profit, and the second entries are Dee's profit.

(a) What actions maximize the combined total profits for Patrick's Pie and Dee's Pizzeria?

(b) Conditional on your response in part (a), does either Patrick's Pie or Dee's Pizzeria have an incentive to cheat on this combination of actions that maximize the combined total profits? Explain using numbers from the matrix for each pizzeria.

(c) Does Patrick's Pie have a dominant strategy?

(d) Identify the Nash equilibrium or equilibria actions for this game.

(e) Ignoring antitrust considerations, suppose that Patrick pays Dee's Pizzeria $20 if Dee chooses to "Stay Out."

   (i) Redraw this matrix including players, actions, and payoffs, showing how Patrick's Pie payment to Dee affected the payoffs.

   (ii) Identify the Nash equilibrium for the redrawn matrix.

STOP

END OF EXAM

Question 3

6 points (1 + 1 + 1 + 1 + 2)

(a) 1 point

- One point is earned for stating the actions that maximize the combined profits are for Patrick's Pie to "Advertise" and for Dee's Pizzeria to "Stay Out."

(b) 1 point

- One point is earned for stating that neither firm has an incentive to cheat and for explaining that Dee's Pizzeria profits would decrease from $0 to –$2 if Dee cheated and that Patrick's Pie's profits would decrease from $175 to $100 if Patrick cheated.

(c) 1 point

- One point is earned for stating that Patrick's Pie does not have a dominant strategy.

(d) 1 point

- One point is earned for stating two Nash equilibria as:
  - Patrick's Pie "Do Not Advertise" and Dee's Pizzeria "Enter"
  - Patrick's Pie "Advertise" and Dee's Pizzeria "Stay Out"

(e) 2 points

- One point is earned for correctly redrawing the payoff matrix and showing the effect of the side payment.

		Dee's Pizzeria	
		Enter	Stay Out
Patrick's Pie	Advertise	$50, –$2	$155, $20
	Do Not Advertise	$150, $15	$80, $20

- One point is earned for stating that the Nash equilibrium is for Patrick's Pie to "Advertise" and for Dee's Pizzeria to "Stay Out."