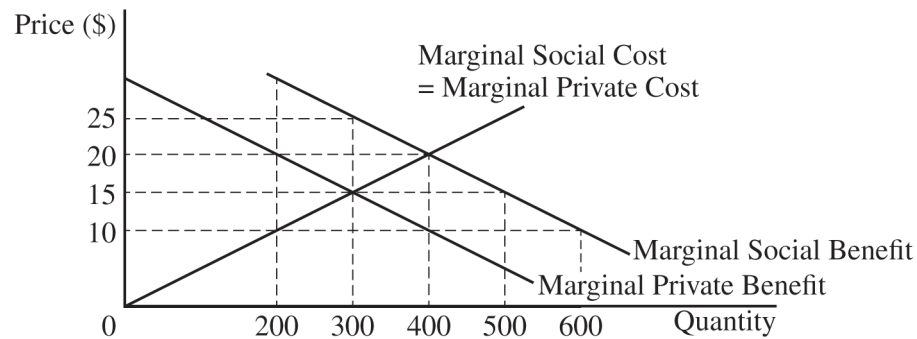2. Good X is produced and sold in a perfectly competitive market. The provided graph shows the market for Good X.

(a) Identify the market equilibrium price and quantity.

(b) Calculate the deadweight loss at the market equilibrium. Show your work.

(c) Suppose the government wants to eliminate the deadweight loss in the market for Good X.

    (i) Which of the following will achieve the government's objective: a per-unit tax on consumers or a per-unit subsidy to consumers? Explain.
    (ii) What is the dollar value of the per-unit tax or per-unit subsidy identified in part (c)(i) ?

(d) Suppose instead the government imposes a price ceiling of $10. Will the price ceiling achieve the socially optimal quantity of Good X? Explain.

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Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

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Field Cruiser

	Reliability	Power
Safety	$10 million, $28 million	$32 million, $35 million
Comfort	$30 million, $40 million	$25 million, $20 million

Nice Ride (rows: Safety, Comfort)

3. Nice Ride and Field Cruiser are the only two producers of vehicles. Nice Ride is deciding whether to improve Safety or Comfort. Field Cruiser is deciding whether to improve Reliability or Power. The payoff matrix shows the payoffs for each combination of strategies. The first entry in each cell shows Nice Ride's profit, and the second entry shows Field Cruiser's profit. Each firm independently and simultaneously chooses its strategy. Assume the two firms know all the information in the matrix and do not cooperate.

(a) What is Field Cruiser's most profitable strategy if Nice Ride chooses to improve Safety?

(b) Does Nice Ride have a dominant strategy? Explain using numbers from the payoff matrix.

(c) Is Nice Ride choosing to improve Safety and Field Cruiser choosing to improve Power a Nash equilibrium? Explain using numbers from the payoff matrix.

(d) Suppose Nice Ride and Field Cruiser decide to merge to maximize combined profits and choose to keep producing both Nice Ride and Field Cruiser vehicles. Assuming the values in the payoff matrix do not change, what would be the new firm's total profit?

(e) Suppose instead that a change in fuel prices reduces the profitability of choosing to improve Power by $10 million for Field Cruiser. Identify each firm's profit at the Nash equilibrium.

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Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

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Question 2: Short   5 points

(a)	State that the market equilibrium price is $15, and the market equilibrium quantity is 300 units.	**1 point**
(b)	Calculate the deadweight loss as $500 and show your work. $$\text{Deadweight loss} = \frac{1}{2} \times (\$25 - \$15) \times (400 - 300) = \frac{1}{2} \times \$10 \times 100 = \$500$$	**1 point**
(c) (i)	State that the government will grant a per-unit subsidy to consumers to achieve the socially optimal quantity of Good X and explain with **ONE** of the following: • A per-unit subsidy to consumers that internalizes external benefits increases the incentive and ability of consumers to buy the socially optimal quantity (400). • A per-unit subsidy to consumers equal to the marginal external benefit increases consumption to the socially optimal quantity (400), by lowering the price paid by the consumer. • A per-unit subsidy to consumers equal to the difference between marginal social benefit and marginal private benefit increases the quantity exchanged to the socially optimal quantity (400).	**1 point**
(ii)	State that the dollar value of the per-unit subsidy is $10.	**1 point**
	Total for part (c)	**2 points**
(d)	State no, the price ceiling will not achieve the socially optimal quantity of Good X and explain that the price ceiling will cause the quantity exchanged in the market, which is limited by the quantity supplied (200), to be less than the socially optimal quantity (400).	**1 point**
	Total for question 2	**5 points**