

Econ 390
Spring 2022
First Midterm

Name ANNOTATED KEY

I understand that this is a closed book, and no calculator exam.

I understand that providing help to another student or seeking help from another human being on this exam will be considered academic misconduct and that if I engage in this conduct I will get a zero on this exam.

Signature _____

Grade:

Essay #1 _____

Essay #2 _____

BC and MC Score _____

TOTAL SCORE _____

Binary Choice: 10 Questions worth 2 points each

EASY

1. Consider a public park in a city. This park is utilized by the people who live nearby: it is large enough that there is always space to enjoy nature for anyone who happens to walk through the park. This park is an example of:

- a. A public good since it is non-rival and non-excludable.
- b. A common resources since it is non-excludable but rival.

EASY

2. Duflo and Banerjee write that people's response to financial incentives are:

- a. Less strong than many people believe to be true.
- b. Usually the most important determinants of a person's behavior.

EASY

3. When social scientists ask people if people are influenced by financial incentives, economic opportunities, or changes in the tax law to alter their behavior, the respondents state that others are influenced by these incentives but that they, themselves, are not likely to be influenced by these incentives.

- a. True
- b. False

*NOT
TOO
BAD*

4. A perfect price discriminating firm will:

- a. Produce the socially optimal amount of the good while *maximizing* minimizing producer surplus. *X*
- b. Produce an output greater than a single price monopolist while some customers pay a price greater than the single price monopolist's price and some customers pay a price less than the single price monopolist's price.

DEFN.

5. "Altruistic punishment" refers to:
- a. A punishment rendered in such a way as to benefit the individual or party being punished: the punishment effectively helps the individual being punished grow and mature and thus, become a better person.
 - b. A situation where an individual engages in punishing another individual where the punishment is costly to the individual electing to do the punishment and where the individual doing the punishment does not reap any benefit from engaging in the punishing behavior.
6. The decision by colleges to pay faculty high salaries, construct fancy and expensive buildings, provide high quality meal service, and build bigger and more luxurious dormitories leads to:
- a. An arms race where the costs for each school get progressively higher straining the capacity of each school to stay in business.
 - b. A death spiral where colleges over time ^{find} that their costs have grown so much that it is impossible for them to operate in the black.
7. The "Tragedy of the Commons" occurs when a good:
- a. Can only be consumed by individuals who pay for the good, but where the market unfortunately fails to provide enough of the good to meet the demand for this good. ✗
 - b. Can be consumed by individuals even if they have not paid for the good and where there are enough individuals consuming this good that they compete with one another. ✓

NOT
HAND

EASY

Use the following information to answer the next **three (3)** questions.

Consider a monopoly that can be described by the following equations where P is the price per unit and Q is the number of units that the firm produces:

Market Demand Curve: $P = 200 - 2Q$

Marginal Cost: $MC = 20 + Q$

Fixed Cost: $FC = 20$

HARD
IF YOU
DO ALL
THE
WORK
EASY

8. If this monopoly acts as a single price monopoly it will:

- a. produce 36 units of the good and earn positive economic profit. ✓
- b. sell each unit for \$128 and earn profits that are less than \$3000. X

9. If this monopoly acts as a single price monopoly it will generate an area of consumer surplus equal to:

a. (\$200 per unit - \$128 per unit)(36 units) X $CS = \frac{1}{2}(200 - 128)(36)$

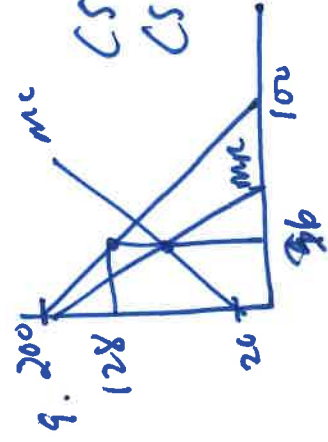
b. (\$36 per unit)(36 units) ✓ $CS = \frac{1}{2}(200 - 128)(36)$

$$\begin{array}{r} 128 \\ \times 36 \\ \hline 768 \\ 384 \\ \hline 4608 \end{array}$$

EASY

10. Suppose this monopolist practices first degree price discrimination. Given this information and holding everything else constant, which of the following statements is true?

- a. Consumer surplus is equal to zero dollars and producer surplus is greater than the economic profits of the firm. ✓
- b. Consumer surplus is a positive number and producer surplus is less than the economic profits of the firm. X



8. $MR = 200 - 4Q$
 $MR = MC$
 $200 - 4Q = 20 + Q$
 $180 = 5Q$
 $36 = Q$
 $P = 200 - 2(36)$
 $P = 200 - 72 = 128$

9. $CS = \frac{1}{2}(72)(36)$
 $CS = (36)(36) ✓$

$$\begin{array}{r} 36 \\ \times 36 \\ \hline 216 \\ 720 \\ \hline 1388 \end{array}$$

$$\begin{array}{r} 648 \\ 740 \\ \hline 1388 \end{array}$$

$$\begin{array}{r} 4608 \\ 1388 \\ \hline 3220 \end{array}$$

10. $TR = P \cdot Q = 128(36) = 4608$
 $TC = 20Q + \frac{1}{2}Q^2 + 20$ (integrate MC + add FC)
 $TC = 20(36) + \frac{1}{2}(36)(36) + 20$
 $TC = 720 + 18(36) + 20$
 $TC = 740 + 648 = 1388$
 $\pi = 4608 - 1388$

WORKSHEET: DO NOT REMOVE FROM EXAM BOOKLET!

EXAM CONTINUES: THERE ARE 30 SCANTRON QUESTIONS AND 2 ESSAY
QUESTIONS

Multiple Choice: 20 questions worth 3 points each

Use the following information to answer the **next two (2)** questions.

Consider a monopoly that can be described by the following equations where P is the price per unit and Q is the number of units of the good:

Market Demand Curve: $P = 400 - 4Q$

Marginal Cost: $MC = 40 + 4Q$

Fixed Cost: $FC = 200$

Suppose this monopolist decides to practice second degree price discrimination where the monopoly will sell the first ten units at a price of \$360/unit, and the next twenty units it produces at a price of \$280/unit.

SOME WORK

11. Given the above information and holding everything else constant, which of the following statements are true?

a. In this example, the area of deadweight loss can be represented as $DWL = (\$120 \text{ per unit})(20 \text{ units})$. **X**

b. In this example, this firm by practicing second degree price discrimination earns total revenue of \$9200. **✓**

c. In this example, the second degree price discriminating firm increases the value of consumer surplus relative to the value of consumer surplus if this firm acts as a single price monopolist. **X**

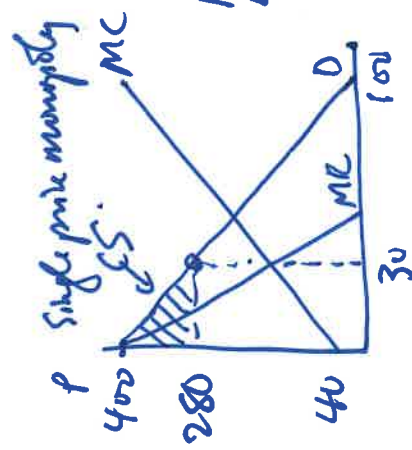
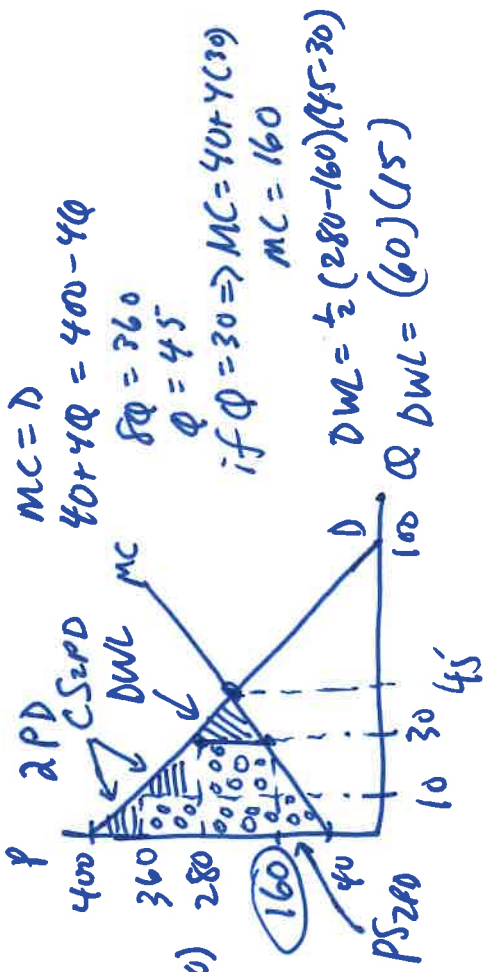
d. In this example, the second degree price discriminating monopolist would have a greater producer surplus if they acted as a single price monopolist. **X**

SOME WORK

12. Given the above information and holding everything else constant, the value of producer surplus when this monopolist acts as the described second degree price discriminator is:

- a. \$8600
- b. \$9200
- c. \$5700
- d. **\$6200**

11.
 $TR = 10(360) + 20(280)$
 $TR = 3600 + 5600$
 $TR = 9200$



$PS = (360 - 280)(10)$
 $+ (280 - 160)(30)$
 $+ \frac{1}{2}(160 - 40)(30)$
 $PS = 800 + 120(30) + 60(30)$
 $PS = 800 + 3600 + 1800$
 $PS = \$6200$

WORKSHEET: DO NOT REMOVE FROM EXAM BOOKLET!

EXAM CONTINUES: THERE ARE 30 SCANTRON QUESTIONS AND 2 ESSAY
QUESTIONS

EASY

13. How many of the following statements are NOT true about the socially optimal amount of the good?

- a. The market always provides the socially optimal amount of the good since markets work well. **FALSE**
- b. The socially optimal amount of the good is that amount where the marginal social benefit from consuming the good is equal to the marginal social cost of producing the good. **MSB = MSC TRUE**
- c. To produce the socially optimal amount of the good it is necessary that the marginal social benefit from consuming the last unit of the good is equal to the marginal social cost of producing the last unit of the good. **TRUE**
- d. People recognize the importance of goods like national defense and lighthouses, but rarely does the socially optimal amount of these goods get produced due to the free rider problem. **TRUE**

Remember to look for
the FALSE statement

WORKSHEET: DO NOT REMOVE FROM EXAM BOOKLET!

EXAM CONTINUES: THERE ARE 30 SCANTRON QUESTIONS AND 2 ESSAY
QUESTIONS

Use the following information to answer the next three (3) questions.

Consider a perfectly competitive market where you are given the following information.

Market Demand Curve: $P = 100 - Q$

Market Supply Curve: $P = 20 + Q$

Individual Firm's Total Cost Curve: $TC = 2q^2 + 20q + 32$

Marginal Cost for the Firm: $MC = 4q + 20$

Assume that this market is initially in short run equilibrium.

14. Given this information and holding everything else constant, how many of the following statements are true?

NOT
BAD

- I. The short run equilibrium price in this market is \$60. TRUE
- II. The value of consumer surplus in the short run is equal to $(1/2)(100 - 60)(40)$ dollars. TRUE
- III. In the short run there are five firms in this market. FALSE
- IV. In the short run the representative firm in the market earns positive economic profit. TRUE

- a. One statement is true.
- b. Two statements are true.
- c. Three statements are true.
- d. Four statements are true.

SIMPLE

15. Given this information and holding everything else constant, which of the following statements is true?

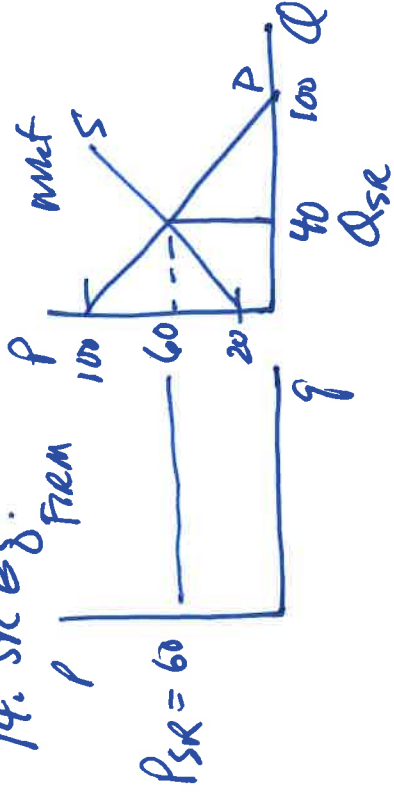
- a. In the long run more firms will enter this market, the market price will decrease, the market quantity will increase, and the representative firm will increase its production relative to the short run equilibrium levels for these variables. X
- b. In the long run there will be exiting of firms, the market price will rise, the market quantity will decrease, and the representative firm will increase its production relative to the short run equilibrium levels for these variables.
- c. In the long run there will be entry of new firms, the market price will decrease, the market quantity will increase, and the representative firm will decrease its production relative to the short run equilibrium levels for these variables.
- d. In the long run there will be exiting of firms, the market price will rise, the market quantity will decrease, and the representative firm will decrease its production relative to the short run equilibrium levels for these variables.

NOT TOO BAD

16. Given this information and holding everything else constant, what is the long run equilibrium price in this market and how many firms are in this market in the long run?

- a. \$36 per unit is the long run price and there will be 16 firms in the market. ✓
- b. \$50 per unit is the long run price and there will be approximately 7 firms in the market. X
- c. \$36 per unit is the long run price and there will be 10 firms in the market. X
- d. \$16 per unit is the long run price and there will be 21 firms in the market. X

14. SR & LR



Set $Q = S$
 $100 - Q = 20 + Q$
 $80 = 2Q$
 $40 = Q$
 $CS = \frac{1}{2}(100 - 60)(40)$

Set $MR = MC$

$60 = 4q + 20$

$40 = 4q$

$q = 10$

$Q_{SR} = 40$

$\frac{Q_{SR}}{q_{SR}} = \frac{40}{10} = 4 \text{ firms}$

$TR = P \cdot q = 60(10) = 600$

$TC = 2(10)(10) + 20(10) + 32$

$TC = 200 + 200 + 32 = 432$

$TR > TC \Rightarrow \therefore \pi_{SR} > 0$

16. LR price $\Rightarrow MC = ATC$

$4q + 20 = 2q + 20 + \frac{32}{q}$

$2q = \frac{32}{q}$

$2q^2 = 32$

$q^2 = 16$

$q = 4$

LR

If $q = 4 \Rightarrow MC = 4(4) + 20 = 36$
 $P_{LR} = 36$

If $P = 36 \Rightarrow$ Demand Δ

$P = 100 - Q$

$36 = 100 - Q$

$Q = 64$

of firms in LR = $\frac{Q_{LR}}{q_{LR}} = \frac{64}{4} = 16 \text{ firms}$

Use the following information to answer the next two (2) questions.

Consider a monopolist that sells their product to two distinct classes of buyers. The monopolist knows the following where P is the price per unit and Q is the number of units of the good:

Demand for the good from Class One Buyers: $P = 32 - Q$

Demand for the good from Class Two Buyers: $P = 40 - Q$

Marginal Cost for the Monopolist: $MC = Q$

Total Cost for the Monopolist: $TC = (1/2)Q^2 + 20$

PREDICTABLE

17. Given this information and holding everything else constant, which of the following best represents this monopolist's total market demand curve for the good?

a. $P = 40 - Q$ for prices greater than or equal to 32; $P = 36 - (1/2)Q$ for quantities greater than or equal to 8 ✓

b. $P = 72 - 2Q$ for quantities less than or equal to 8 units; $P = 40 - Q$ for prices less than or equal to 32 ✗

c. $P = 40 - Q$ for quantities less than or equal to 8 units; $P = 18 - (1/2)Q$ for prices less than or equal to 32 ✓ ✗

d. $P = 40 - Q$ for prices greater than or equal to 32; $P = 36 - 2Q$ for prices less than or equal to 16 ✓ ✗

SOME WORK

18. Suppose this monopolist decides to practice third degree price discrimination. Given this information and holding everything else constant, how many of the following statements are true?

I. Class One buyers will buy 7 units of the good at a price that is less than the price that Class Two pays for the units consumed by Class Two. ✓ TRUE

II. The profit maximizing quantity this firm should produce if it practices third degree price discrimination is greater than the quantity this firm should produce if it acts as a profit maximizing single price monopolist. FALSE

III. This monopolist will earn total revenue of \$494.00 if the monopolist practices third degree price discrimination. TRUE

IV. The total cost this monopolist incurs when it practices third degree price discrimination is equal to \$185.00. FALSE

- a. One statement is true.
b. Two statements are true. ✓
c. Three statements are true.
d. Four statements are true.

WORKSHEET: DO NOT REMOVE FROM EXAM BOOKLET!

EXAM CONTINUES: THERE ARE 30 SCANTRON QUESTIONS AND 2 ESSAY
QUESTIONS

Defn.

19. Consider a public good. The market is unlikely to provide the socially optimal amount of the public good because:

- a. This is a good that is uniquely suited to be provided best by the private market. The government always under provides a public good. *No!* *X* *↳ private market always underprovides*
- b. When a good is excludable no one has an incentive to supply the good since the marginal cost of supplying an additional unit of this good is \$0. *X* *↳ non-excludable*
- c. When a good is non-excludable producers have an incentive to supply too much of the good at every price. *X* *↳ too little*
- d. When people free ride this means that the market demand curve does not reflect the true demand curve for the good. *✓*

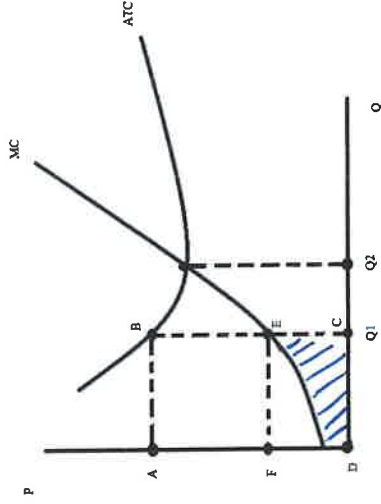
NoT
HARD

20. Consider the passenger pigeon that went extinct in 1914. How many of the following statements are true?

- I. Since no one owned the passenger pigeons they were essentially a common resource available to anyone that wished to use them. *T*
 - II. Prior to their extinction passenger pigeons were an example of a good that was both excludable and non-rival. *F* *non-excludable but rival*
 - III. The extinction of the passenger pigeon is essentially a story of the over harvesting of a non-excludable but rival good. *T*
 - IV. The passenger pigeon extinction can be used as an example of the "Tragedy of the Commons". *T*
- a. Statements I, II and IV are true statements.
 - b. Statements I, III and IV are true statements.**
 - c. Statements III and IV are true statements.
 - d. Statement III is the only true statement.

**COVERED
IN
LECTURE**

21. Consider the following graph depicting the cost curves for a firm. P is the price per unit and Q is the quantity of the good measured in units. MC is the marginal cost curve for the firm and ATC is the firm's average cost curve. Points A, B, E, C, D, and F are marked on the graph.



Given this graph and holding everything else constant, if you measure the area under the marginal cost curve from a quantity of zero units to a quantity of Q1 units, you will have measured:

- a. The firm's average variable cost. **X**
- b. The firm's fixed cost. **X**
- C**. The firm's variable cost.
- d. The firm's producer surplus.

$SMC = TC$
 $SMC = VC + FC$
Area under MC from 0 to Q1

HARD

22. Consider the following monopoly that can be described by the following equations where P is the price per unit and Q is the quantity of units:

Market Demand Curve: $Q = 200 - 2P$
 Marginal Cost: $MC = (3/2)Q$
 Total Cost: $TC = (3/4)Q^2 + 10$

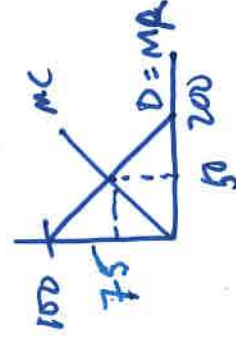
$\rightarrow 2P = 200 - Q$
 $P = 100 - \frac{1}{2}Q$

$$\begin{array}{r} 3750 \\ -1885 \\ \hline 1865 \end{array}$$

Suppose this monopoly decides to be a perfect price discriminator. Given this information and holding everything else constant, how many of the following statements are true?

- I. When this firm acts as a perfect price discriminator it sells 50 units of the good and the last consumer of this good buys the good at \$75 per unit. **T**
- II. The firm's producer surplus will be \$10 less than the firm's profits when the firm practices first degree price discrimination. **F** *more*
- III. The firm's variable cost is equal to $(3/4)Q^2$. **T**
- IV. When this firm acts as a perfect price discriminator, the firm earns profits equal to \$2490. **T**

- a. One statement is true.
- b. Two statements are true.
- C**. Three statements are true.
- d. Four statements are true.



$MR = MC$
 $100 - \frac{1}{2}Q = \frac{3}{2}Q$
 $100 = 2Q$
 $50 = Q$
P for last unit = $100 - \frac{1}{2}(50) = 75$

$PS = \frac{1}{2}(100)(50)$
 $PS = 2500$
 $\pi = PS - FC$
 $\pi = 2490$

Easy way to get answer for hard question!

NOT HARD

23. In one of our readings the author discussed several terms. Which of the following statements best describes the "discrepant SAT score"?

- a. The discrepant SAT score refers to a SAT score that suggests that the student is a better student than the student's high school grades imply. ✓ *One kind of discrepant score*
- b. The discrepant SAT score refers to a SAT score that suggests that the student is a worse student than the student's high school grades imply. ✓ *Another kind of discrepant score*
- c. The discrepant SAT score is a SAT score that does not align with the student's high school grades. *Best answer*
- d. The discrepant SAT score is a SAT score that aligns well, or discerns well, the ability of the high school student, since the SAT score aligns with the high school grades of that student.

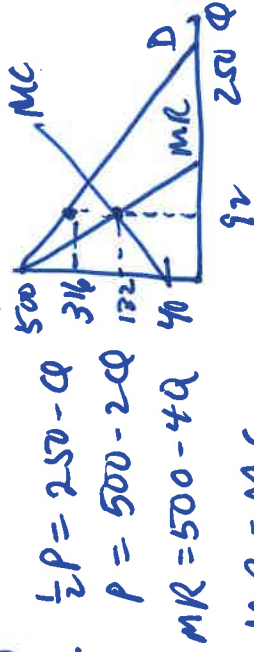
SOME WORK

24. Consider a monopoly that can be described with the following equations:

Market Demand: $Q = 250 - (1/2)P$
 Marginal Cost: $MC = 40 + Q$

Given this information, which of the following statements is true if this monopoly acts as a single price monopolist?

- a. This single price monopolist will produce 92 units of the good and sell each unit for \$316. ✓
- b. This single price monopolist will produce a level of output that is equal to the socially optimal level of output since the price of the last unit sold is equal to the marginal cost of producing the last unit. X *P ≠ MC for last unit*
- c. This single price monopolist will produce at a level of output where the producer surplus in this market is smaller than the consumer surplus in this market. X *see work below*
- d. This single price monopolist will produce at a level of output where the deadweight loss is minimized. X *DWL > 0, DWL is NOT minimized*



22. Π

$$TR = \frac{1}{2}(100 - 75)(50) + 75(50)$$

$$TR = (25)(25) + 3750$$

$$TR = 625 + 3750$$

$$TR = 4375$$

$$TC = \frac{3}{4}(50)(50) + 10$$

$$TC = \frac{7500}{4} + 10 = 1875 + 10 = 1885$$

$$\Pi = 4375 - 1885 = 2490$$

$$\begin{array}{r} 4375 \\ 1885 \\ \hline 2490 \end{array}$$

$$24. \frac{1}{2}P = 250 - Q$$

$$P = 500 - 2Q$$

$$MR = 500 - 4Q$$

$$MR = MC$$

$$500 - 4Q = 40 + Q$$

$$460 = 5Q$$

$$92 = Q$$

$$P = 500 - 2(92)$$

$$P = 500 - 2(92) = 500 - 184 = 316$$

$$CS = \frac{1}{2}(500 - 316)(92) \quad PS = \frac{1}{2}(316 - 40)(92)$$

$$CS = (96)(184)$$

$$PS = (184) \left(\frac{92}{16} \right) + \frac{1}{2}(92)(92)$$

$$CS < PS$$

NOT
TOO
BAD

25. The "death spiral for colleges" refers to:

- a. How the policy of discounting the tuition price of attending colleges has led to ever increasing pressures to offer more discounts to incoming students which leads, in turn, to colleges and universities finding it increasingly difficult to raise the necessary revenue they need from tuition payments. ✓
- b. How the policy of increasing the list price of tuition for private, nonprofit colleges has led to a steady decline in applications and a decrease in the number of students willing to pay the full tuition amount at these schools. X
- c. How the "arms race" for amenities and services at universities and colleges has driven costs so high that colleges are finding it hard to survive. X This is true but it's not the "death spiral"
- d. How the decision by colleges and universities to fund their operations with revenue sources other than tuition has led to a decline in, or death of, tuition payments at these schools. X Junk answer

EASY

26. Angel Perez, the Director of Admissions at Trinity College, had two primary missions. They were:

- a. To decrease the number of less qualified affluent students and replace them with more highly qualified affluent students. Not quite it ✓
- b. To help balance the school's budget through the admissions decisions that were made and to diversify the student body at Trinity College. Better
- c. To reduce Trinity College's expenses from hiring a consulting firm to help analyze their admission decisions and to diversify the student body at the school beyond its narrow prep school demographic. X
- d. To increase the total number of students receiving a free education while limiting the number of less qualified affluent students. X

27. Consider a market that is composed of ten individuals. Each individual's demand curve is the same and can be described by the following equation where P is the price per unit and Q is the number of units:

$$\text{Individual Demand Curve: } P = 100 - 2Q$$

Given this information and holding everything else constant, what is the market demand curve?

- a. $P = 1000 - 20Q$
- b. $P = 100 - (1/50)Q$
- c. $P = 1000 - 2Q$
- d. $P = 100 - (1/5)Q$

28. Hans Rosling in his book **Factfulness** writes about the human tendency to want to simplify things and group things into two distinct groups. He refers to this human tendency or "instinct" as the:

- a. Size Instinct.
- b. Gap Instinct.
- c. Negativity Instinct.
- d. Straight-Line Instinct.

29. Hans Rosling in his book Factfulness describes the shape of various lines depicting data. He discusses an example ~~where~~ the number of cavities for twelve year olds where each twelve year is placed in their income level as designated by Level I, Level II, Level III and Level IV. Which of the following descriptions best “fits” this data?

- a. The number of cavities experienced by twelve year olds is an upward sloping straight line as you move from Level I to Level II to Level III to Level IV. ✗
- b. The number of cavities experienced by twelve year olds is “humped-shape” as you move from Level I to Level II to Level III to Level IV.
- c. The number of cavities experienced by twelve year olds is a downward sloping straight line as you move from Level I to Level II to Level III to Level IV.
- d. The number of cavities experienced by twelve year olds is a “slide” as you move from Level I to Level II to Level III to Level IV.

30. Richard Thaler, a very prominent behavioral economist, decided to stop giving 100 point exams in his class since he found that the class was quite sad if he gave this type of exam and the mean was around 70. He found that students were happier if the exam had 137 points even if the mean on the exam remained at approximately 70% of the available points. Thaler’s grading system using the 137 point scale:

- a. Had no effect on the student’s grade in the course.
- b. Allowed students to receive grades in the nineties when they answered 70% of the exam’s points correctly.
- c. Is an example of human irrationality.
- d. All of the above statements are true.

NOT
HARD

Essay Questions: 2 Questions at 10 points each

1. Hans Rosling writes about the gap instinct, the fear instinct, and the straight line instinct in his book, Factfulness. Pick one of these instincts: first, define what it is and then provide three good examples to illustrate the instinct. Make sure your essay is organized and clear.

Grading Rubric:

3 points for the definition of the instinct

2 points for each reason up to a maximum of 6 points

1 point for clarity, grammar, and quality of essay

2. Economists talk a lot about non-rival goods. What does non-rival mean? Provide a definition of this term and then three examples to illustrate non-rival.

Grading rubric:

3 points for definition of non-rival

2 points for each example up to a maximum of 6 points

2 points for clarity, grammar, and quality of essay