



< Previous



Next >

Part 1

🔖 Bookmark this page

Midterm Exam due Jun 5, 2024 07:30 CST 

Completed

Problem E1.1.1

1/1 point (graded)

Consider two cities, City A and City B, which are entirely identical except that Uber operates in City A, but not in City B. Consumers in City A can choose between Uber and a taxi when selecting a means of transport, while consumers in City B can travel only via taxi. When the government imposes a tax on taxis in City A and City B, the price of a taxi ride will increase \_\_\_\_\_ in City A than in City B.

☐ The answer cannot be determined from the provided information

☒ less

☐ by the same amount

☐ more



Explanation

The price of a taxi ride will increase by more in City B. A tax on taxis shifts the supply curve of taxis to the left in both cities. In City A, the demand for taxi rides is relatively elastic since Uber serves as a substitute. In City B, however, the demand for taxi rides is relatively inelastic since there is no substitute. When the demand curve is more inelastic (i.e. relatively steeper), there will be a greater price increase when the supply curve shifts to the left.

Show answer

Submit

You have used 1 of 1 attempt

ⓘ

 Answers are displayed within the problem

Problem E1.1.2

1/1 point (graded)

Archie really likes musicals. He's seen Aladdin, Les Miserables and Phantom of the Opera. He enjoyed Aladdin more than Les Miserables and Les Miserables more than Phantom of the Opera. He is getting ready to take another trip to New York and wants to see one of these three shows again. When he arrives in New York, he discovers that Les Miserables has been canceled so he has to choose between Aladdin and Phantom of the Opera. He chooses to go to the Phantom of the Opera. (We don't observe how much each show costs, but Archie does.)

☐ Archie's preferences must violate completeness.

☐ Archie's preferences must violate transitivity.

☐ Archie's preferences must violate non-satiation.

☐ Archie's preferences must be rational. (They must not violate the above assumptions.)

☒ None of the above



Explanation

Archie's choice depends on his budget constraint and prices. From his choice alone we cannot say anything about whether his preferences violate transitivity. They may, or they may not. It's possible that he chooses to go to the Phantom of the Opera because he can't afford to go to Aladdin (which would not violate transitivity), but it's also possible that he prefers Phantom of the Opera to Aladdin (which would violate transitivity). Furthermore, we have no evidence that his preferences violate completeness (he has not expressed an inability to choose between options) or non-satiation (he has not indicated that he would not prefer to see more musicals).

Show answer

Submit

You have used 1 of 1 attempt

ⓘ

 Answers are displayed within the problem

Problem E1.1.3

1/1 point (graded)

Claudia spent last summer working as a delivery driver in Cambridge to pay for her trip to go to Japan. Paying the cost of this trip is her sole reason for earning money. Halfway through the summer, the minimum wage in Massachusetts increased by \$2. What happened next?

☒ The answer cannot be determined from the provided information

☐ Claudia's labor supply decreased.

☐ Claudia's labor supply remained the same.

☐ Claudia's labor supply increased.



Explanation

If the minimum wage is not binding, nothing happens to the market equilibrium and Claudia's labor supply does not change. If the minimum wage is binding, because Claudia is a target earner, her labor supply decreases.

Show answer

Submit

You have used 1 of 1 attempt

ⓘ

 Answers are displayed within the problem

< Previous

Next >

MIT Online

MITx

Microeconomics

MITx 14.100X

Course

Dates

Discussion

Handouts

Help

rdgunawan

Course / Midterm 1 / Midterm 1

Course

Midterm 1

Midterm 1

< Previous

📖

✔️✔️

✔️✔️

✔️✔️

✔️✔️

Next >

Part 2

🔖 Bookmark this page

Midterm Exam due Jun 5, 2024 07:30 CST Completed

Problem E1.2.1

3.0/3.0 points (graded)

In 1998, the Kenyan government confiscated and burnt 12 tons of elephant ivory in a gesture to persuade the world to halt the ivory trade. They hoped that the gesture would reduce demand for ivory by bringing attention to illegal poaching.

Assume that demand and supply are neither perfectly elastic nor perfectly inelastic.

What is the effect on price in the ivory market if the gesture is effective?

The effect on price is ambiguous

Price decreases

Price remains the same

Price increases

✔️

What is the effect on quantity in the ivory market if the gesture is effective?

Quantity remains the same

Quantity increases

The effect on quantity is ambiguous

Quantity decreases

✔️

If the gesture is effective, ivory's price elasticity of demand \_\_\_\_\_ be estimated from this shock.

can

cannot

✔️

What is the effect on price in the ivory market if the gesture has no effect??

Price decreases

Price remains the same

Price increases

The effect on price is ambiguous

✔️

What is the effect on quantity in the ivory market if the gesture has no effect?

Quantity increases

Quantity remains the same

Quantity decreases

The effect on quantity is ambiguous

✔️

If the gesture has no effect, ivory's price elasticity of demand \_\_\_\_\_ be estimated from this shock.

cannot

can

✔️

Explanation

In case where the gesture was effective: burning ivory shifts the supply curve inward (to the left) through the destruction itself and the demand curve inward (to the left) through the effect on tastes. Quantity decreases but the effect on price is ambiguous. Since both the demand and the supply curve shift, we cannot use this shock to supply to estimate the price elasticity of demand.

In case where the gesture had no effect: burning ivory only shifts the supply curve inward (to the left). Quantity decreases and price increases. In this case, we can use this shock to estimate the price elasticity of demand.

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

Problem E1.2.2

5/5 points (graded)

In Cambridge, there are individuals from three different citizenships: Ethiopians, Brazilians, and Americans. Coffee is only sourced from Brazil and Ethiopia. Brazilians and Ethiopians only like to drink coffee from their own country, while for Americans a cup of coffee is the same regardless from its origin (Brazil or Ethiopia). All of them have the same level of income denoted by  $I$  and  $\alpha$  is some coefficient greater than 0.

What is a utility function for Americans?

$U_A(b, e) = \alpha be, \alpha > 0$

$U_A(b, e) = \alpha (be)^2, \alpha > 0$

$U_A(b, e) = \alpha b + \alpha e, \alpha > 0$

$U_A(b, e) = 0$

None of the above

$U_A(b, e) = \alpha b, \alpha > 0$

$U_A(b, e) = \alpha e, \alpha > 0$

$U_A(b, e) = \alpha \sqrt{be}, \alpha > 0$

✔️

What is the magnitude (i.e. the absolute value) of the marginal rate of substitution for Americans? (Suppose Brazilian coffee is on the  $y$ -axis.)

1

Answer: 1

1

What is a utility function for Brazilians?

$U_B(b, e) = \alpha b + \alpha e, \alpha > 0$

$U_B(b, e) = \alpha e, \alpha > 0$

$U_B(b, e) = \alpha (be)^2, \alpha > 0$

$U_B(b, e) = \alpha \sqrt{be}, \alpha > 0$

$U_B(b, e) = \alpha b, \alpha > 0$

None of the above

$U_B(b, e) = \alpha be, \alpha > 0$

$U_B(b, e) = 0$

✔️

What is the magnitude (i.e. the absolute value) of the marginal rate of substitution for Brazilians? (Suppose Brazilian coffee is on the  $y$ -axis.)

0

Answer: 0

0

What is a utility function for Ethiopians?

$U_E(b, e) = 0$

$U_E(b, e) = \alpha (be)^2, \alpha > 0$

$U_E(b, e) = \alpha be, \alpha > 0$

None of the above

$U_E(b, e) = \alpha b, \alpha > 0$

$U_E(b, e) = \alpha \sqrt{be}, \alpha > 0$

$U_E(b, e) = \alpha e, \alpha > 0$

$U_E(b, e) = \alpha b + \alpha e, \alpha > 0$

✔️

Explanation

For Americans, Brazilian and Ethiopian coffee are perfect substitutes so their utility function is of the form  $U_A(b, e) = \alpha b + \alpha e$ , and the indifference curves are straight lines with slope -1. The marginal rate of substitution is given by 1. They are willing to substitute exactly one cup of Brazilian coffee for an additional cup of Ethiopian coffee. Intuitively, the goods are perfect substitutes.

Brazilians only derive utility from drinking Brazilian coffee. Their utility function is given by  $U_B(b, e) = \alpha b$  and their indifference curves are given by horizontal lines. Their marginal rate of substitution is 0. They are not willing to give any amount of Brazilian coffee for an additional cup of Ethiopian coffee. Intuitively, they only derive utility from drinking Brazilian coffee.

Ethiopians only derive utility from drinking Ethiopian coffee. Their utility function is given by  $U_E(b, e) = \alpha e$ , and their indifference curves are given by vertical lines. Their marginal rate of substitution is  $\infty$ . They are willing to give any amount of Brazilian coffee for an additional cup of Ethiopian coffee. Intuitively, they only derive utility from drinking Ethiopian coffee.

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

Problem E1.2.3

3/3 points (graded)

Continuing with the above coffee example, if  $p_b < p_e$ , what is the optimal consumption bundle for Americans?

$e^* = 0, b^* = \frac{I}{p_b}$

None of the above

$e^* = \frac{I}{p_b}, b^* = 0$

$e^* = \frac{I}{p_b}, b^* = \frac{I}{p_b}$

$e^* = 0, b^* = \frac{I}{p_e}$

$e^* = \frac{I}{p_e}, b^* = 0$

$e^* = \frac{I}{p_e}, b^* = \frac{I}{p_b}$

✔️

If  $p_b < p_e$ , what is the optimal consumption bundle for Brazilians?

$e^* = \frac{I}{p_b}, b^* = \frac{I}{p_b}$

$e^* = 0, b^* = \frac{I}{p_e}$

$e^* = 0, b^* = \frac{I}{p_b}$

$e^* = \frac{I}{p_e}, b^* = 0$

$e^* = \frac{I}{p_e}, b^* = \frac{I}{p_b}$

None of the above

$e^* = \frac{I}{p_b}, b^* = 0$

✔️

If  $p_b < p_e$ , what is the optimal consumption bundle for Ethiopians?

$e^* = 0, b^* = \frac{I}{p_b}$

$e^* = \frac{I}{p_b}, b^* = \frac{I}{p_b}$

None of the above

$e^* = \frac{I}{p_b}, b^* = 0$

$e^* = 0, b^* = \frac{I}{p_e}$

$e^* = \frac{I}{p_e}, b^* = \frac{I}{p_b}$

$e^* = \frac{I}{p_e}, b^* = 0$

✔️

Explanation

For each one of the types of citizens, the constrained maximization problem can be written as:  $\max_{b,e} U_i(b, e) \text{ s.t. } p_b b + p_e e \leq I$

Americans: The optimal consumption bundle is given by:  $p_b < p_e$  then  $e^* = 0$  and  $b^* = \frac{I}{p_b}$ .

If  $p_b = p_e$  then  $e^* = e$  and  $b^* = b$  such that  $p_b b + p_e e = I$ , where  $b, e \geq 0$ .

If  $p_b > p_e$  then  $e^* = \frac{I}{p_e}$  and  $b^* = 0$ .

Brazilians: we have that for them regardless of  $p_b$  and  $p_e$ ,  $e^* = 0$  and  $b^* = \frac{I}{p_b}$ .

Ethiopians: we have that for them regardless of  $p_b$  and  $p_e$ ,  $e^* = \frac{I}{p_e}$  and  $b^* = 0$ .

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

< Previous

Next >

© All Rights Reserved

© MITx Online. All rights reserved except where noted.  
About Us - Terms of Service - Privacy Policy - Honor Code - Accessibility

Calculator

Course / Midterm 1 / Midterm 1

🕒

< Previous

✔✔

✔✔

✔✔

✔✔

Next >

Part 3

🔖 Bookmark this page

Midterm Exam due Jun 5, 2024 07:30 CST 

Completed

Problem E1.3.1

1.0/1.0 point (graded)

Texaco employs workers on its oil rigs. The supply and demand for labor is  $D = 100 - 2p$  and  $S = 10 + p$ .

In equilibrium, what is the wage of labor?

$p^* =$

30

✔ Answer: 30

30

In equilibrium, what is the quantity of labor supplied?

$Q^* =$

40

✔ Answer: 40

40

Explanation

In equilibrium, set  $S = D$ . So  $10 + p^* = 100 - 2p^*$  and  $p^* = 30$ . Then plug in  $p^* = 30$  to either the demand or supply equation to solve for  $Q^*$ :  $Q^* = 10 + p^* = 40$ .

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

Problem E1.3.2

3/3 points (graded)

Suppose now that the government sets a minimum wage of \$40 for oil rig workers due to the dangers of the job.

In the new equilibrium, what is the wage of labor?

$p^* =$

40

✔ Answer: 40

40

In the new equilibrium, what is the quantity of labor that is employed?

$Q^* =$

20

✔ Answer: 20

20

What is the excess supply of labor?

$=$

30

✔ Answer: 30

30

Explanation

At  $W = 40$ ,  $D = 20$  and  $S = 50$ , so  $Q^* = 20$  and  $p^* = 40$ . There is an excess supply of labor of 30.

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

Problem E1.3.3

1/1 point (graded)

Consider a positive shock to labor demand. Texaco has discovered a new technology that increases their value from each worker, so they are willing to pay \$ $x$  more per worker. Find the minimum  $x$  such that the minimum wage is not binding.

$x =$

15

✔ Answer: 15

15

Explanation

$p = (100 - D) / 2 + x$  under the shock, or  $D = 100 + 2x - 2p$ . In equilibrium,  $10 + p^* = 100 + 2x - 2p^*$  or  $p^* = 30 + 2x/3$ . For  $x = 15$ , equilibrium wage is \$40 without the minimum wage

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

Problem E1.3.4

1/1 point (graded)

Under the new technology where \$ $x$  is the minimum you found earlier, how many **more** workers are hired than in the minimum wage scenario with old technology?

$=$

30

✔ Answer: 30

30

Explanation

Quantity increases from 20 (with old technology and a minimum wage) to 50 (with new technology and a minimum wage).

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

Problem E1.3.5

2/2 points (graded)

Now return to the conditions of  $D = 100 - 2p$  and  $S = 10 + p$ .

What are the price elasticities of supply and demand at equilibrium? (Hint: Price elasticity of supply is positive. Price elasticity of demand is negative.)

$\epsilon_S =$

3/4

✔ Answer: 3/4

$\frac{3}{4}$

$\epsilon_D =$

-6/4

✔ Answer: -3/2

$-\frac{6}{4}$

Explanation

$\epsilon_S = \frac{p}{S} \frac{dS}{dp} = \frac{30}{40} \times 1 = \frac{3}{4}$ .  
 $\epsilon_D = \frac{p}{D} \frac{dD}{dp} = \frac{30}{40} \times (-2) = -\frac{3}{2}$ .

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

Problem E1.3.6

4/4 points (graded)

The government noticed that when taxes on workers went up, wages also went up. Suppose that instead of a \$40 minimum wage, the government taxes each worker by \$ $z$  (with  $z > 0$ ) to raise worker wages.

Express the equilibrium take-home (post-tax) wage for workers as a function of  $z$ :  $\alpha + \beta z$ . Calculate  $\alpha$  and  $\beta$ .

$\alpha =$

30

✔ Answer: 30

30

$\beta =$

-2/3

✔ Answer: -2/3

$-\frac{2}{3}$

Express the tax incidence for workers as  $\theta z$ . Calculate  $\theta$ .

$\theta =$

2/3

✔ Answer: 2/3

$\frac{2}{3}$

Was this strategy effective at raising take-home wages?

☐ This strategy was completely effective

☐ This strategy was partially effective

☒ This strategy was ineffective

☐ The effectiveness of this strategy is ambiguous

✔

Explanation

A tax of  $z$  shifts the supply curve in by  $z$ . The new supply curve is  $S = 10 + p - z$ . In equilibrium,  $10 + p - z = 100 - 2p$ , or  $p = 30 + z/3$ . Workers earn a wage of  $30 + z/3$  and Texaco pays  $30 + z/3$ , but workers pay a tax of  $z$ , so their final take home wage is  $30 - 2z/3$ .  $Q = 40 - 2z/3$ . The amount that Texaco pays per work decreases, but wages also decrease.  
Tax incidence for workers is  $\frac{2}{3}z$ , whereas for the company it is  $\frac{1}{3}z$ .  
The wage that the workers get is always below the original level. Therefore, the government policy was completely ineffective.

Show answer

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

< Previous

Next >

© All Rights Reserved

© MITx Online. All rights reserved except where noted.  
About Us - Terms of Service - Privacy Policy - Honor Code - Accessibility

Calculator



