1. A firm currently sells 3,500 units of its product at a price of $500.  It cuts price to 350 and then sells 6,000 units.  What is the arc price elasticity of demand?  Carry the answer out to two decimal places, e.g. -2.531 is -2.53, -.152 is -.152, etc.  Do not worry about rounding.
2. A firm’s Demand Function is Q = 100 – 1.25\*P.  If the firm wishes to price in the elastic segment of the demand schedule, price must be more than \_\_\_\_\_\_\_. Your answer should be entered as a whole number, not a fraction.  Enter nothing but a whole number for your answer, such as the number 60.  Use the point price elasticity formula to determine your answer.  You can use a spreadsheet to answer this question.
3. A firm’s Demand Function is Q = 100 – 1.25\*P.  When the firm sets price to maximize total revenue (TR), then TR will be \_\_\_\_\_\_\_. Your answer should be entered as a whole number, do not enter a fraction.  Enter a whole number for your answer, such as the number 6000.  You can use a spreadsheet to answer this question.
4. A firm’s Demand Function is Q = 200 – 1.25\*P and its total cost function is TC = 50+100\*Q+.4\*Q2.  What price should the firm charge to maximize profits?  Only analyze whole numbers for price.  Your answer should be entered as a whole number, do not enter a fraction. Enter whole number for your answer, such as a price of 600 with no decimals (e.g., do not enter 600.0). You can use a spreadsheet to answer this question.
5. The demand for bicycles in San Antonio is Q = 2,000 -5\*PRICE + 20\*INCOME.  If PRICE = 120 and INC = 12.  What is the income elasticity of demand?  Report your elasticity to two decimal places, for example, if Ei = 1.268, report 1.26.  Do not round.
6. To increase revenues and profits, a firm is considering a 5% (use .05) increase in price and a 20% (use .20) increase in advertising.  If the price elasticity of demand is -1.5 and the advertising elasticity of demand is 1.2, what would be the % change in quantity demanded?

|  |  |  |
| --- | --- | --- |
|  | A. | -.150. |
|  | B. | .025. |
|  | C. | .165. |
|  | D. | .124. |
|  | E. | .090. |

1. A restaurant estimates its price elasticity of demand is -6.0 and its income elasticity is 2.0.  Income has dropped 10% (.10) due to unemployment during the Pandemic.  Quantity demanded before the Pandemic was 120 plates per day. If the restaurant cuts price by 5% (.05), what will be the expected number of plates sold per day once it reopens?
2. Suppose price is $200 and the price elasticity of demand is -2.5.  What is marginal revenue? Enter your answer to two decimal places and round up.  For example, if your answer is 124.478, enter 124.48 as your answer.
3. If the marginal revenue from a product is $40 and the price elasticity of demand is -2.0, what is the price?
4. Read the following article on demand and super bowl ticket pricing:  
     <https://www.forbes.com/sites/prishe/2013/09/19/super-bowl-xlviii-pricing-a-lesson-in-demand-elasticity/#26e647a8796f> .  From this article, what can we conclude?

|  |  |  |
| --- | --- | --- |
|  | A. | Professional sports teams price in the elastic segment of their demand functions to maximize overall profits because of complements. |
|  | B. | Professional sports teams price in the unitary elastic segment of their demand functions to maximize overall profits because of complements. |
|  | C. | Professional sports teams price in the elastic segment of their demand functions to maximize revenue because of substitutes. |
|  | D. | Professional sports teams price in the inelastic segment of their demand functions to maximize revenue per seat because of complements. |

1. You are told by someone that they “*believe the soft drink demand schedule in the MMH textbook is incorrectly specified.  A key variable that is missing is whether the residents of the state are outdoor types who love the beach, camping, etc.  Everyone knows that States whose residents love the outdoors will have higher soft drink demand because the extra activity will increase demand for soft drinks.*”  You will assess this statement by including a dummy variable for an outdoor (Outdoor) state.  Outdoor states are defined (by me for this quiz) as Alabama, Arizona, Arkansas, California, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, Tennessee, Texas, and Virginia.  
      
   Use the MMH soft drink data plus the Outdoor variable to estimate the soft drink demand Equation (1) **Cans = α + β1\*Price + β2\*Income + β3\*Temp + β4\*Outdoor.**Outdoor is a 1 or 0 dummy variable for outdoor state.**A**n outdoor state is assigned a value of 1 while a non-outdoor state is assigned a value of 0.  What is the estimated coefficient for Outdoor?

|  |  |  |
| --- | --- | --- |
|  | A. | 42.311. |
|  | B. | 63.15. |
|  | C. | 86.47. |
|  | D. | 94.63. |
|  | E. | 102.55. |

1. Refer to your Regression output for Equation (1).  At what level is the coefficient for the Outdoor variable statistically significant?

|  |  |  |
| --- | --- | --- |
|  | A. | .01 level. |
|  | B. | .05 level. |
|  | C. | .10 level. |
|  | D. | Not statistically significant at any of the above levels. |

1. What is the estimated coefficient for Income?

|  |  |  |
| --- | --- | --- |
|  | A. | .89. |
|  | B. | 1.15. |
|  | C. | 2.25. |
|  | D. | 3.29 |
|  | E. | 4.03. |

14. Refer to your Regression output for Equation (1).  At what level is the coefficient for Income statistically significant?

|  |  |  |
| --- | --- | --- |
|  | A. | .01 level. |
|  | B. | .05 level. |
|  | C. | .10 level. |
|  | D. | Not statistically significant at any of the above levels. |

1. *Suppose*your estimated equation for Soft Drink Demand is **Cans = α + β1\*Price + β2\*Income + β3\*Temp + β4\*Outdoor** =**400 - 150\*Price + 3\*Income + 1\*Temp + 40\*Outdoor.** Now suppose Price = 2.08, Income = 17, Temp = 69 and the state is an “Outdoor” state. Use the demand function I just provided to find the point Price Elasticity of demand. [Side Note: you are finding the point price elasticity of soft drink demand for Texas.]

|  |  |  |
| --- | --- | --- |
|  | A. | -.68. |
|  | B. | -1.26. |
|  | C. | -1.63. |
|  | D. | -2.64. |
|  | E. | None of the above. |
|  |  |  |

Next, estimate the multiplicative or log linear equation (2) **lnCans = lnα + β1\*lnPrice + β2\*lnIncome + β3\*lnTemp + β4\*Outdoor.**  You will need to convert Cans, Price, Income and Temp into natural log variables to estimate this equation. Outdoor is still a 0 – 1 dummy variable, where an outdoor state is assigned a value of 1.0.  Do not try to take the log of the Outdoor dummy variable. What percentage of the variation in demand for cans is explained by this model?

|  |  |  |
| --- | --- | --- |
|  | A. | .89. |
|  | B. | .74. |
|  | C. | .61. |
|  | D. | .55. |

Refer to your output for Equation **(2b)** **lnCans = lnα + β1\*lnPrice + β2\*lnIncome + β3\*lnTemp + β4\*South.**  What is the estimated price elasticity of demand?

|  |  |  |
| --- | --- | --- |
|  | A. | -.88. |
|  | B. | -1.25. |
|  | C. | -1.88. |
|  | D. | -2.34. |
|  | E. | -3.01. |

Refer to your output for Equation **(2b)** **lnCans = lnα + β1\*lnPrice + β2\*lnIncome + β3\*lnTemp + β4\*South.**  What is the estimated Income elasticity of demand?

|  |  |  |
| --- | --- | --- |
|  | A. | .08. |
|  | B. | .25. |
|  | C. | .47. |
|  | D. | .64. |
|  | E. | 1.01. |