# Week 9 Quiz

A store has just received the newest trendy "Pike" shoes and would like your help obtaining the optimal price. He sent a survey to 10 typical customers and gathered the following Willingness to Pay:

50, 60, 40, 200, 100, 50, 80, 50, 60, 400.

For this problem, assume that these 10 customers represent your total market.

Based on this information, answer questions: 1,2,3,4, 5 and 6.

## Question 1

1.0/1.0 point (graded)

Based on historic data, the manager believes that he should price the shoes at a price of $49. How many consumers would buy the shoes at that price?

9 ✔ **Answer:** 9

9

**Explanation**

9 consumers have a WTP higher than $49.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

## Question 2

1.0/1.0 point (graded)

At that price, what would be his revenue?

441 ✔ **Answer:** 441

441

**Explanation**
49*9=441

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

## Question 3

1.0/1.0 point (graded)
Assuming that the cost of manufacturing a pair of shoes is 0, what do you think about his pricing decision?

- This is not a good decision. He should sell it at a price of $100.
- This is not a good decision. He should sell it at a price of $400.
- This is not a good decision. He should sell it at a price of $50. ✔
- He is right. This is the optimal price.

**Explanation**
All the consumers who are willing to pay $49 are also willing to pay $50 so his decision can't be correct.
You should try all the possible prices: at $40, the 10 consumers would buy and the profit would be $400, at $50, 9 consumers would buy and the profit would be $450...

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

## Question 4

0.5/0.5 points (graded)

The manager would now want to fit a logistic distribution to his data. Using the method of moments, what is the value of the mean parameter (m) for this dataset.

Round your response to the closest unit. This is, if the answer is 30.5 write 31

109 ✔ **Answer:** 109

$109$

**Explanation**

m=mean of the dataset

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

## Question 5

1.5/1.5 points (graded)

The manager would now want to fit a logistic distribution to his data. Using the methods of moments, what is the value of the scale parameter (s) for this dataset. Assume a value of $\pi = 3.14$.

Hint: To use the method of moments, you must use the sample variance.

Round your response to the closest unit. This is, if the answer is 30.5 write 31.

62 ✔ **Answer:** 62

$62$

**Explanation**

You should compute $\sigma^2$ the sample variance (so dividing by n-1 and not n) of the dataset. Then $s^2 = 3\sigma^2/\pi^2$ and you should report the square root of this number.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

## Question 6

1.0/1.0 point (graded)

Based on the two previous parameters, what is the value of the demand curve for a price of $400, D(400)?

Round your response to the nearest thousand. This is, if the answer is 30.0005 write 30.001

.009 ✔ **Answer:** 0.009

.009

**Explanation**

D(400)=1/(1+exp((400-m)/s))

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

This is a set of independent questions.

**Please answer each separately.**

## Question 7

1/1 point (graded)

The WTP for a new product is distributed uniform between [0,1]. The marginal cost is 0.5. What is the optimal price for this product?

- 0.5
- 1
- 0
- 0.75 ✔

**Explanation**

You want to optimize the function (1-p)(p-0.5). The maximal value is reached at p=0.75.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

## Question 8

1/1 point (graded)

Suppose the demand curve of a product as a function of price is $D(p) = a - bp$. What is the distribution of WTP?

- $p \sim U[(a-1)/b, a/b]$ ✔
- $p \sim U[(b-1)/a, b/a]$
- $p \sim U[0, a/b]$
- $p \sim U[a, b]$
- $p \sim N(a/b, b^2)$

**Explanation**

Linear demand curve is associated with a uniform distribution. The demand is between 0 and 1 which leads to those bounds.

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

## Question 9

1/1 point (graded)

What are the advantages of using the logistic distribution?

- The parameters are easily estimable
- The demand curve has a closed form analytical expression
- The shape is similar to the normal distribution
- All of the above ✔

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

## Question 10

1/1 point (graded)

Consider the two data points: 40, and 60.

If we fit a logistic distribution with parameters (mean) m=0 and (scale) s=1, what is the value of the log-likelihood function for this dataset?

Hint: You should use the natural logarithm (ln).

Round your response to the closest unit. This is, if the answer is 30.5 write 31

-100 ✔ **Answer:** -100

$-100$

**Explanation**

Apply the log-likelihood formula

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

Learn About Verified Certificates