

# **BAX 442 Advanced Statistics**

## **Assignment 1**

Group: Team I

Members:

1. Sadhanha Anand
2. Winnie Chen
3. Shivank Chandra
4. Rohit Desai
5. Avantika Goyal
6. Hillary Hoang

**Conjoint Analysis** is a statistical technique used to understand consumer preferences and decision-making processes. It operates on the back of a simple principle that products and services are not individual entities but a collection of attributes or features. These attributes, such as price, quality, brand etc. collectively influence the consumer's choice.

The main idea behind conjoint analysis is to break down a product or service into its constituent (also referred to as attributes in conjoint analysis) and then understand how the combination of these attributes influences consumer decision making behavior.

### **Working Procedure:**

1. Decomposition of product/service into attributes
2. Creation of potential attribute combinations
3. Collection of consumer preference data
4. Data Analysis
5. Determine the preferences for each attribute
6. Adjust attribute levels and evaluate anticipated customer preferences
7. Identify consumer groups with similar preferences
8. Use the insights for decision making

### **Benefits:**

Conjoint analysis can be used to identify the features that are most important to customers when making purchasing decisions. By analyzing customer preferences, businesses can optimize product designs to better meet customer needs and expectations. Conjoint analysis also helps businesses determine how different price points for a product or service affect consumer choices. These insights are then used to create successful products and targeted marketing strategies based on customer preferences.

## RESULTS:

### 1. Partworths for each attribute levels

Member	Intercept	Screen_75	Screen_85	Resolution_4k	Brand(Sony)	Price
Avantika	13.250	5.125	3.875	-7.167	1.5	-1.833
Hillary	13.625	-3.750	0.3750	2.00	0.6666667	-2.66667
Rohit	8.333333	-0.75	8	3.666667	2	-2.333333
Sadhanha	15.791	0.5	-1.625	-1.333	-0.333	-4.166
Shivank	18	0.25	0.50	-5.5	-3.5	-2.5
Winnie	15.3333	-5.125	-4.625	0.8333	1.8333	-1.8333

### 2. Attribute Importance of each attribute

Member	Screen Size	Resolution	Brand	Price
Avantika	24.59	140.98	-29.51	-36.07
Hillary	43.61	21.15	7.05	28.19
Rohit	52.24	21.89	11.94	13.93
Sadhanha	-214.29	228.57	-314.29	400.00
Shivank	-4	88	56	-40
Winnie	10	16.67	36.67	36.67

### ***3. Willingness to pay for each non-price attribute level***

<b>Member</b>	<b>Screen Size</b>	<b>Resolution</b>	<b>Brand</b>
Avantika	-0.25	-1.43	0.3
Hillary	0.825	0.4	0.1333333
Rohit	1.75	0.733	0.4
Sadhanha	-0.25	0.266	-0.366
Shivank	0.05	-1.1	-0.7
Winnie	0.1	0.1667	0.3667

### ***4. Optimal price and Market Share for Optimal Price***

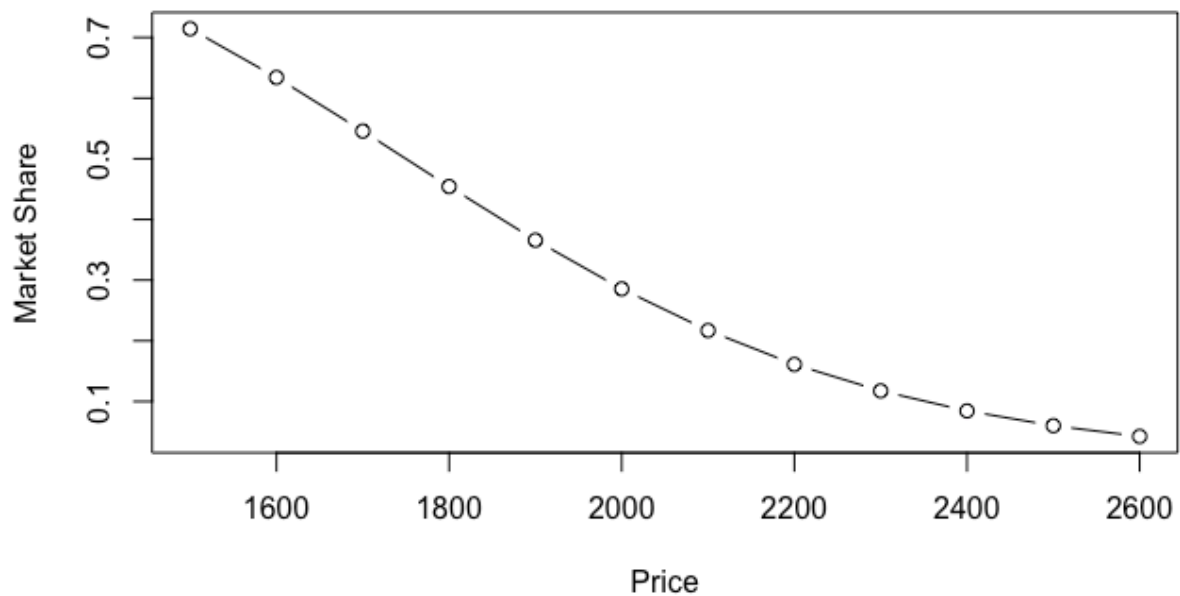
<b>Member</b>	<b>Optimal Price</b>	<b>Market Share for Optimal Price</b>
Avantika	\$2300	0.117
Hillary	\$2300	0.026589331
Rohit	\$2300	0.006263
Sadhanha	\$2600	0.914
Shivank	\$2800	0.75271199
Winnie	\$2300	0.10272602

### 5. Maximum profit

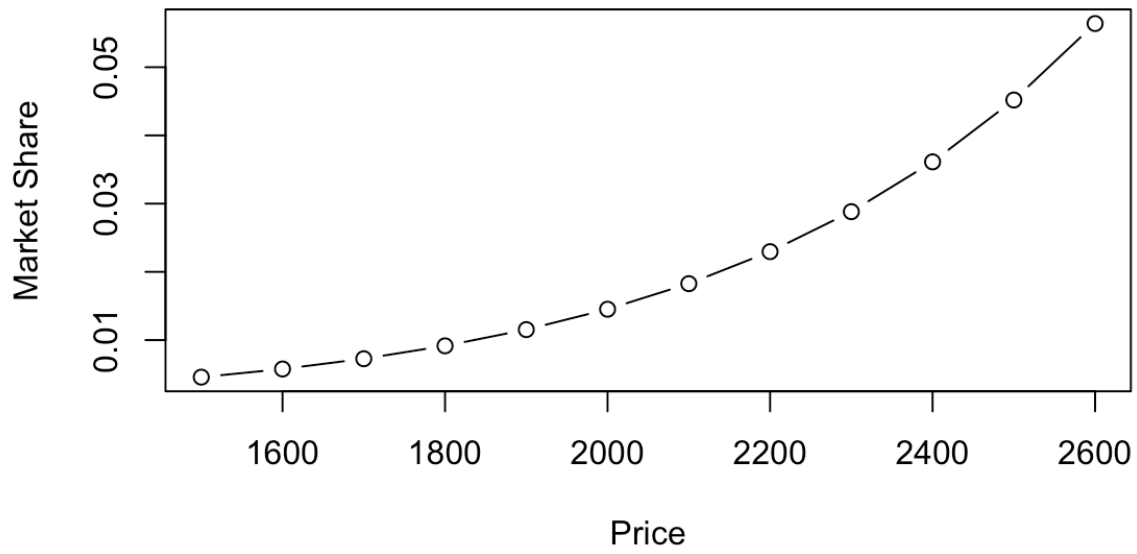
Member	Maximum Profit
Avantika	\$3600
Hillary	
Rohit	\$300
Sadhanha	\$1800
Shivank	\$60000
Winnie	\$3000

### 6. Plot market shares as a function of prices

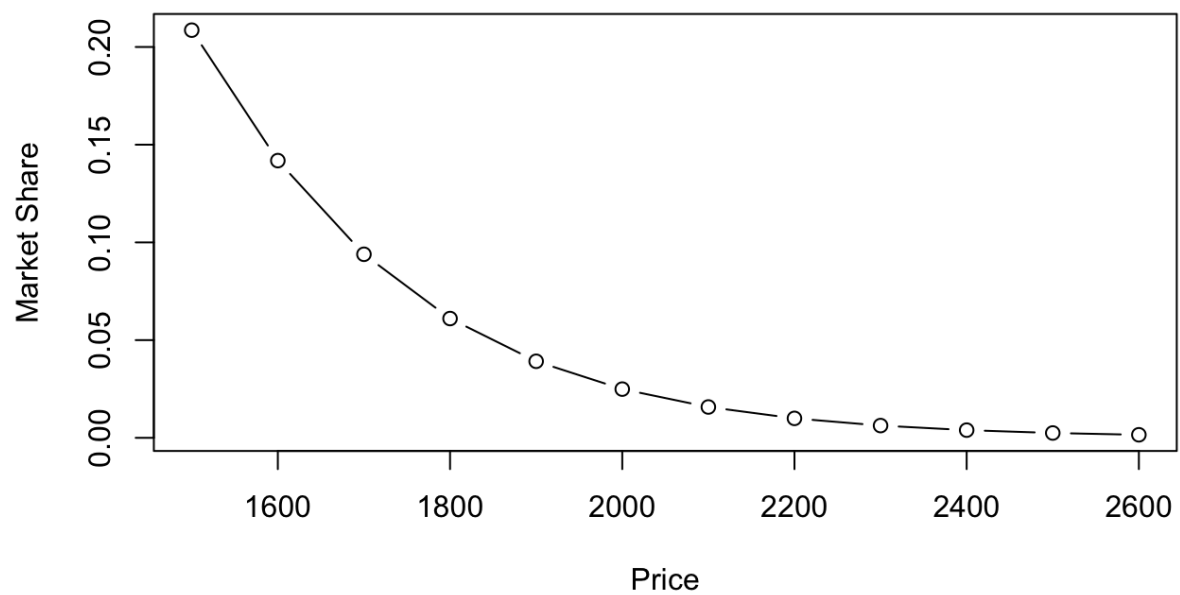
Avantika:



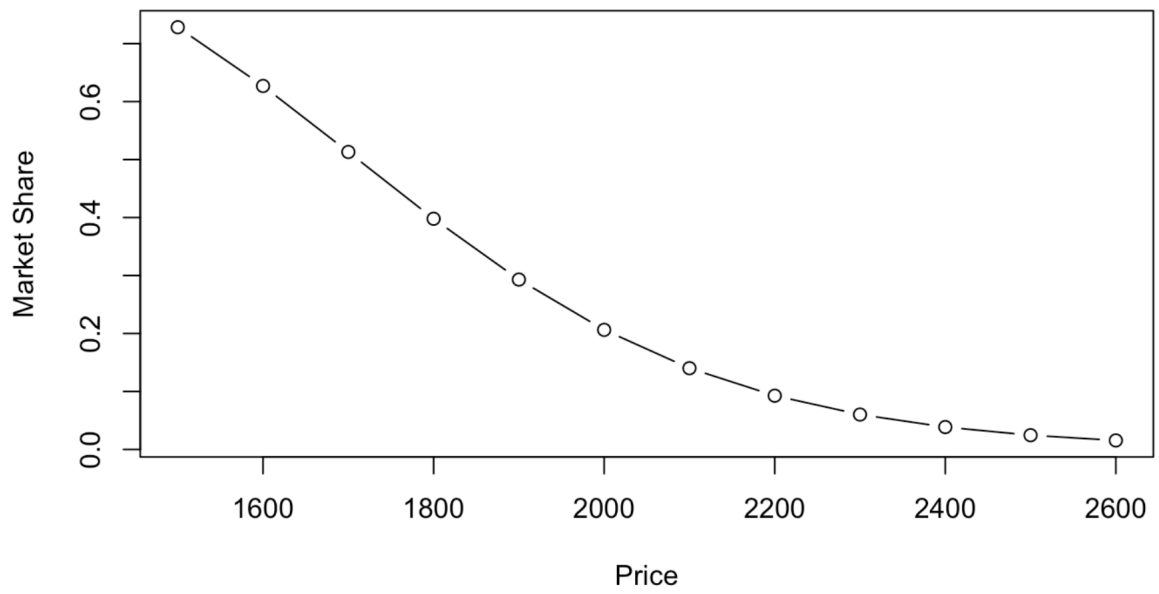
Hillary:



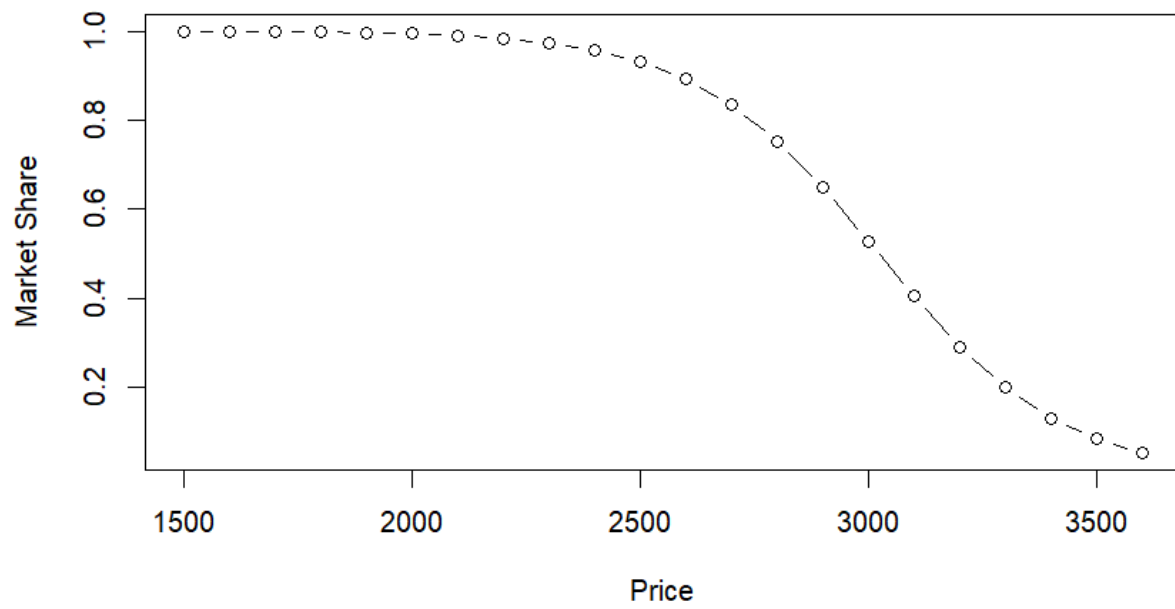
Rohit:



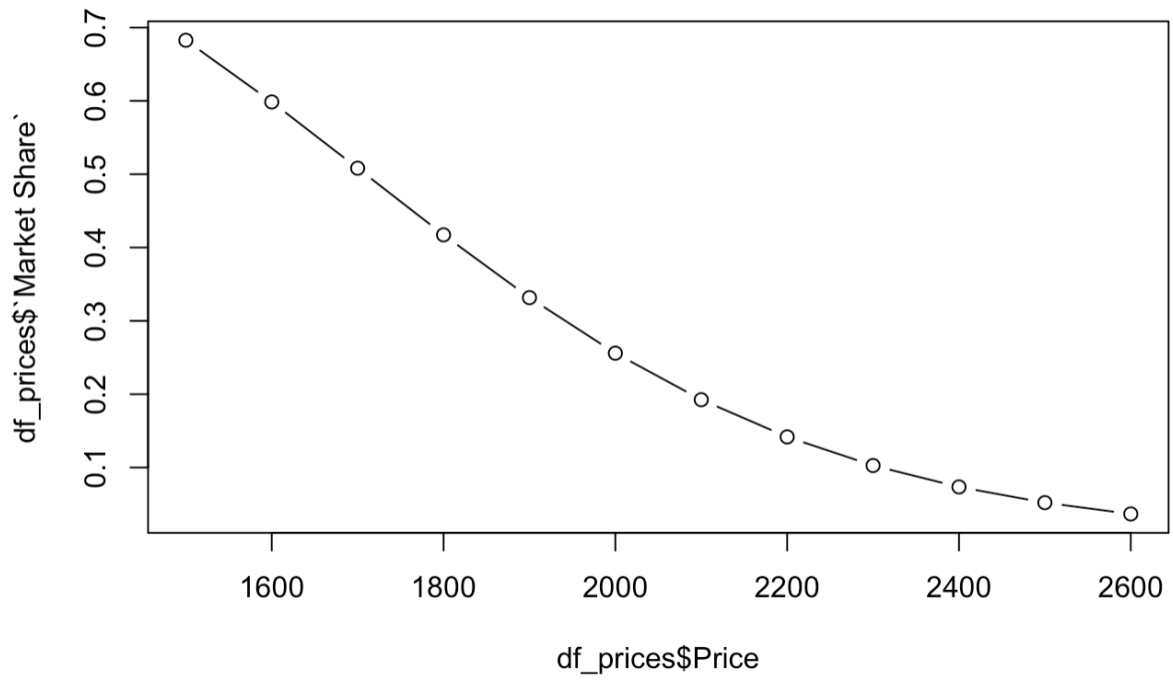
Sadhanha:



Shivank:

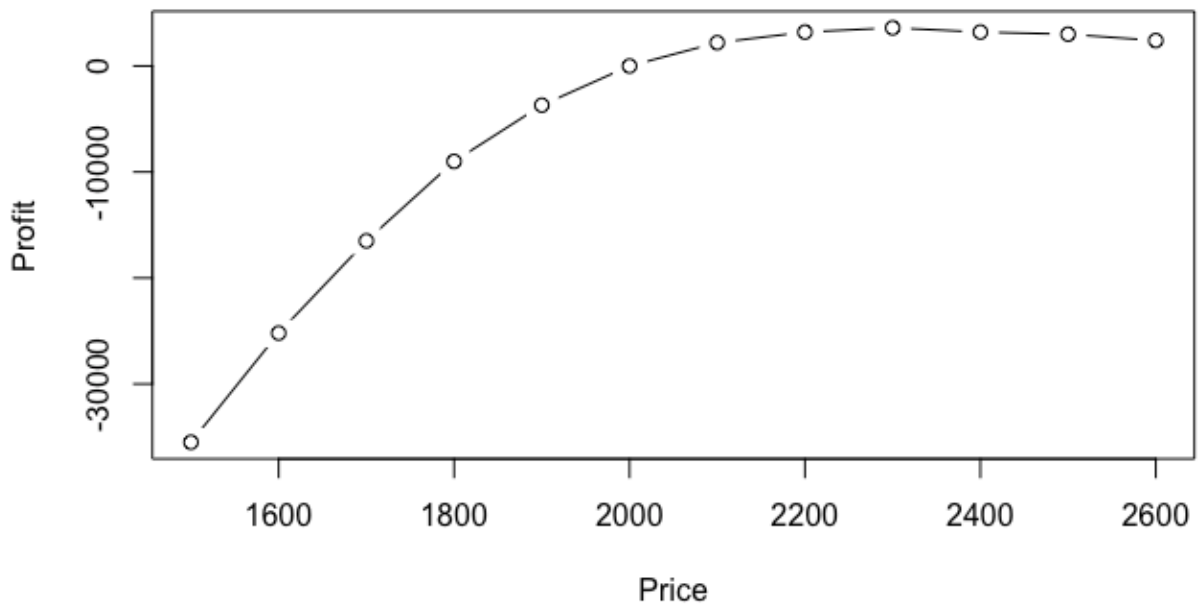


Winnie:



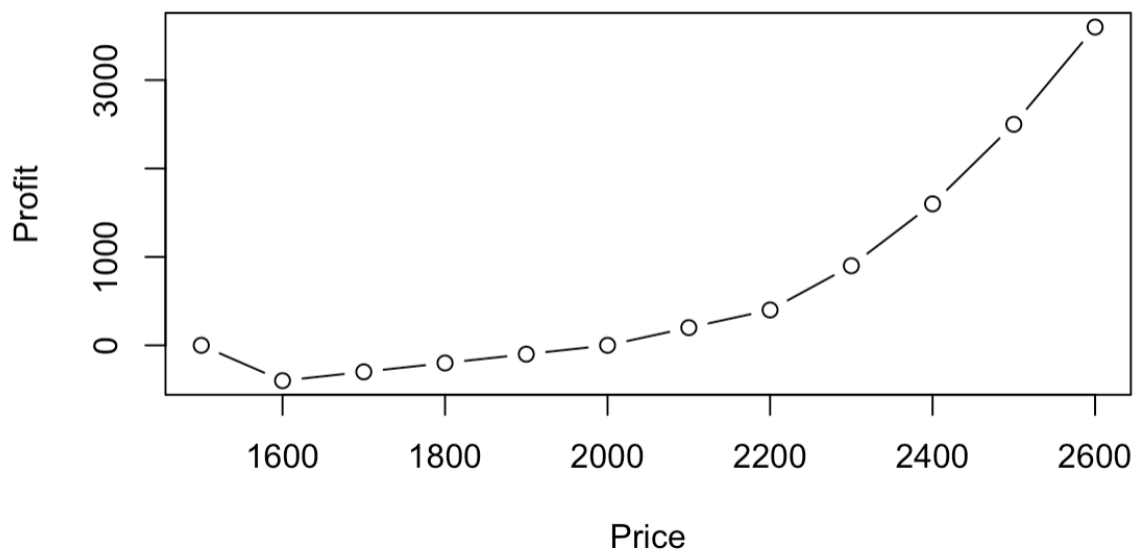
### 7. Plot profit as a function of prices

Avantika:

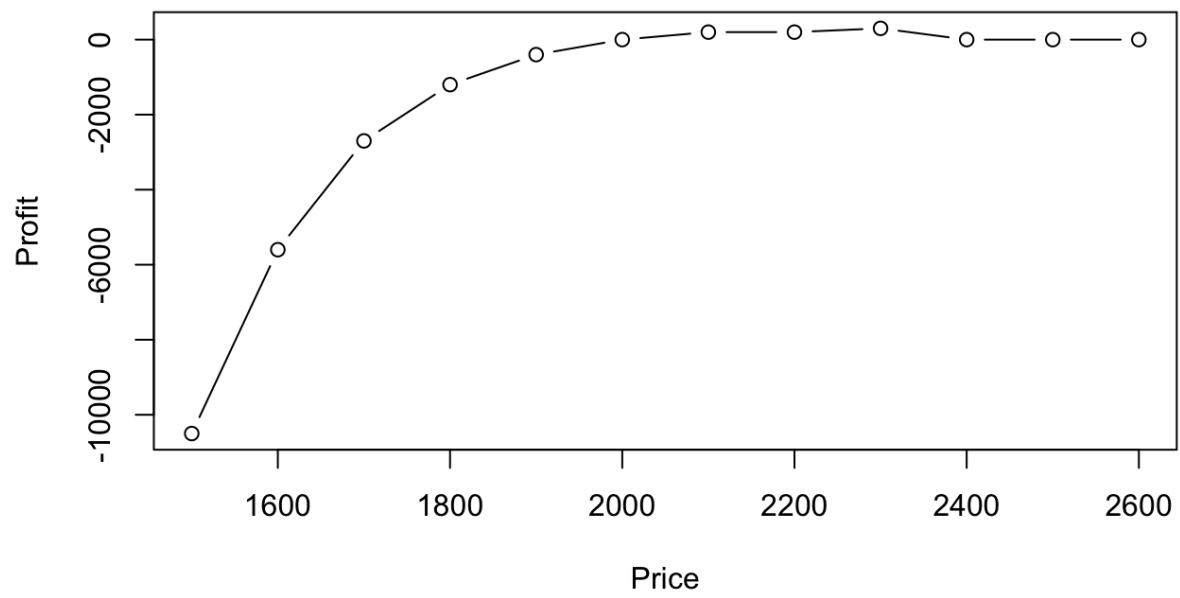


Hillary:

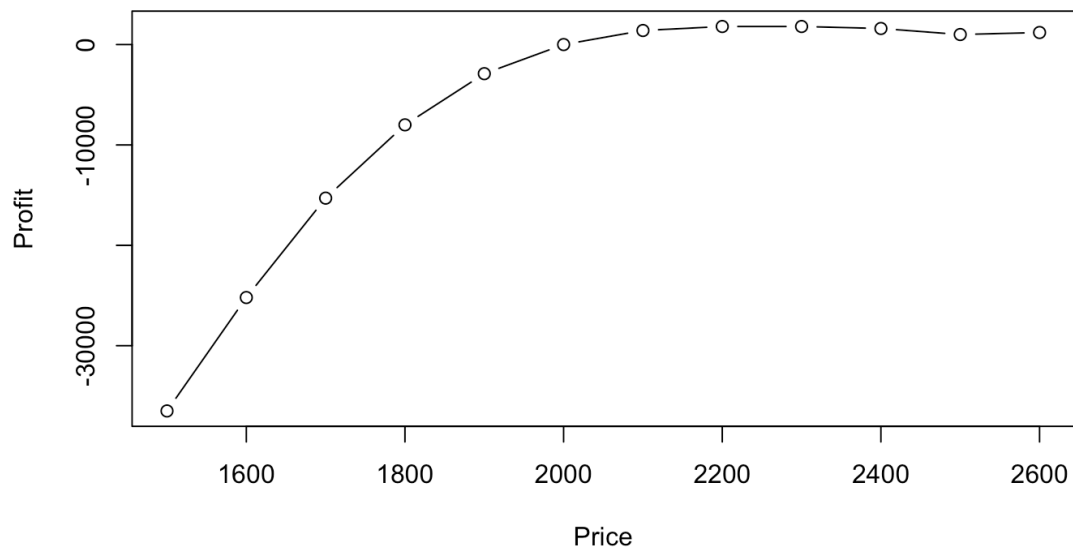




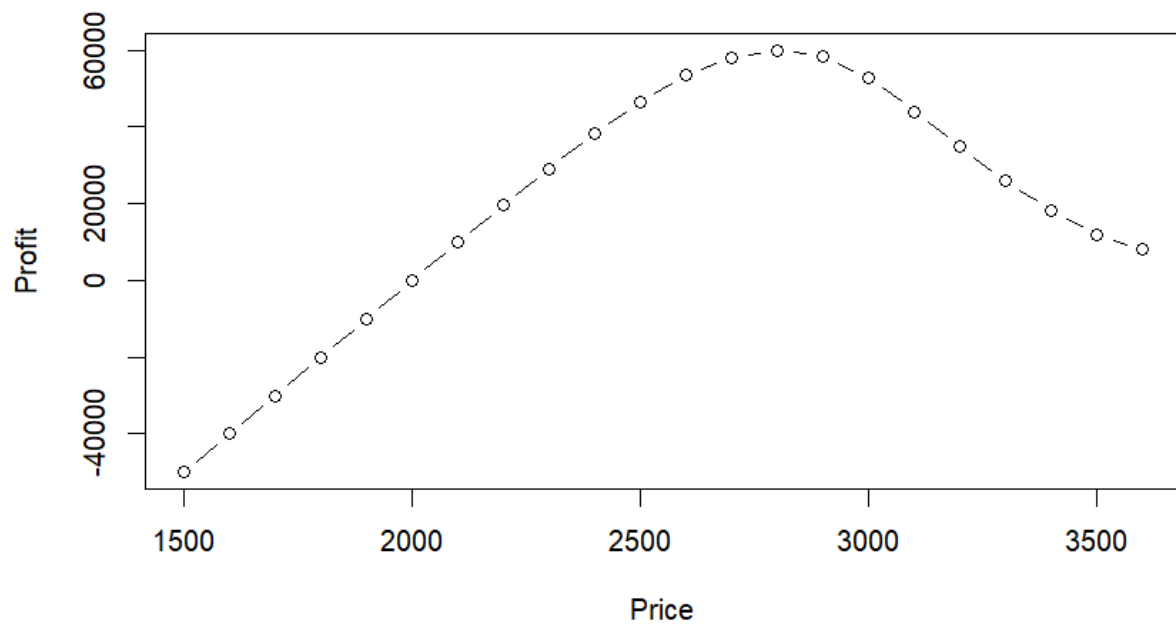
Rohit:



Sadhanha:



Shivank:



Winnie:

