1. Charging a higher price for a motel room to customers with dogs or cats than to customers with no pets is most likely an example of:

(a) First-degree price discrimination.
(b) Second-degree price discrimination.
(c) Third-degree price discrimination.
(d) Actual cost differences.

2. Quantity discrimination makes sense if:

(a) Buyers of smaller quantities are more price sensitive than buyers of larger quantities.
(b) Buyers of smaller quantities are less price sensitive than buyers of larger quantities.
(c) Demand for the good is perfectly elastic.
(d) The lower price for larger quantities encourages all consumers to purchase the larger quantity.

3. Sarah buys little stuffed animals for $5 each. They come in different varieties. If the producer stops making (retires) a certain variety, a stuffed animal of that variety will be worth $100; otherwise it is worth $0. There is 25% chance that any variety will be retired. For the purchase of an individual animal, what is the value to Sarah of knowing ahead of time whether or not that variety will be retired?

4. The figure below shows Rob's utility function (the curved blue line). He currently has $100 of wealth, but there is a 50% chance that it could all be stolen.
(a) What is Rob's Expected Utility and Expected Wealth.

(b) Is Rob risk-averse, risk-neutral or risk loving. Explain.

(c) How much would Rob pay to eliminate the chance of theft?

5. John's utility from an additional dollar increases more when he has $10,000 than when he has $1,000. From this, we can conclude that John has what type of preferences towards risk?

2. MONOPOLY AND PRICE DISCRIMINATION

Suppose that UMBRELLA corporation faces market demand function

\[ Q^D = 100 - 10P \]

Its cost function is \( TC = 10 + 5Q \). The UMBRELLA corporation is a monopolist since it holds the patent on “mobile rain avoidance devices”.

1. How much will it choose to produce and what will be the market price for umbrellas?

2. What is consumer surplus in the case of monopoly.

3. Suppose that the UMBRELLA corporation can perfectly price discriminate (first-degree price discriminate). How much will it sell and what are it’s profits. What is consumer surplus?

4. Suppose that the market for umbrellas is composed of an island with two sides, a side with rain forest and a desert side. Demand for umbrellas on the rain forest side is:

\[ Q^{RF} = 50 - 2P \]
while the demand on the desert side is:

\[ Q^{DE} = 50 - 8P \]

The *UMBRELLA* corporation can price discriminate between these two markets. What will be the prices and quantities in the Rain Forest and Desert market? Why are these prices different?

5. Compute total consumer surplus and producer profits when the *UMBRELLA* Corporation can price discriminate between Rain Forest and Desert markets. How are these different from the case where there is no price discrimination?

3. **Choice Under Uncertainty**

1. A 16 year old is deciding between several different job prospects after dropping out of high school.

<table>
<thead>
<tr>
<th>Option</th>
<th>Salary</th>
<th>Probability of jail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1: Drug dealing</td>
<td>$48,400</td>
<td>0.6</td>
</tr>
<tr>
<td>Option 2: Carjacking</td>
<td>$19,600</td>
<td>0.3</td>
</tr>
<tr>
<td>Option 3: McDonalds</td>
<td>$9,025</td>
<td>Never go to jail</td>
</tr>
</tbody>
</table>

This 16 year old girl has utility:

\[ U = \sqrt{X} \]

where \( X \) is her income. Here we also assume if you get caught and go to jail, you will earn zero income.

(a) What is the **Expected Income** of each option?

(b) What is the **Expected Utility** of all 3 options and which one would you recommend she choose (from an economic perspective)?

(c) What is the lowest salary McDonalds could offer that would keep her from engaging in a life of crime?

(d) Suppose there is a market for "Jail Insurance " which casts $5,000 a year and a pay of $10,000 if you go to jail.

   i. What will the youth pick?

   ii. Where are the profits (losses) of the insurance company ?

   iii. Would you think that the government should ban jail insurance?