EXERCISES CHAPTER 16

Exercise 1. For each of the following real-world examples, identify which type of price discrimination is being used (First-degree, Second-degree, Third-degree, Bundling, or Two-part tariff):

(a) A movie theater charging $12 for adults and $8 for students
(b) A cable company offering a "Sport Package" that includes ESPN, Fox Sports, and NBC Sports for $30/month but does not offer the channels individually.
(c) A newspaper offers a discount to students and educators with a .edu email address.
(d) A software company selling a "Professional Suite" that includes word processing software, spreadsheet software, and presentation software, but does not sell the software products individually.
(e) A company that sells cybersecurity services to Fortune 100 companies charges different prices to each company, uses what they know about the companies to try and charge each company as close to the maximum that they will pay as possible.

Exercise 2. A monopolist sells to two groups of consumers with different demand functions:

- Group A: $y_a = 100 - 2p$
- Group B: $y_b = 80 - p$

The monopolist has cost function $c(y) = 10y$

(a) If the monopolist must charge the same price to both groups, what price will they charge?
(b) If the monopolist can charge different prices to each group, what price will they charge to Group A?
(c) What price will they charge to Group B?
(d) How much more profit does the monopolist make by price discriminating?

Exercise 3. A monopolist sells to two groups (a and b) of consumers with the following demand functions

$$y_a = 20 - p, \qquad y_b = 12 - P,$$

and has constant marginal (and average) cost of $4 per unit so their cost function is $c(y) = 4y$.

(a) If the monopolist must charge the same price to both groups, what quantity will they choose to sell and what price will they charge?
(b) If the monopolist can charge different prices to each group, what price will they charge to Group a?
(c) What price will they charge to Group b?
(d) How much additional profit does the monopolist earn by using third-degree price-discriminating instead of charging a single price?

Exercise 4. A firm sells two products, A and B, to two consumers with the following valuations:

	Product A	Product B	Bundle
Consumer 1	40	60	100
Consumer 2	60	40	100

(a) If the firm sells the products separately, what is the maximum profit it can earn?
(b) If the firm sells only bundles, what is the maximum profit it can earn?
(c) How much more profit does the firm make by bundling?

Exercise 5. A firm sells two products, X and Y, to two consumers with the following valuations:

	Product X	Product Y	Bundle
Consumer 1	30	70	100
Consumer 2	70	30	100

(a) If the firm sells the products separately, what is the maximum profit it can earn?
(b) If the firm sells only bundles, what is the maximum profit it can earn?
(c) How much more profit does the firm make by bundling?

Exercise 6. A firm has a constant marginal cost of \$2 per unit so their cost function is $c(y) = 2y$. **Each consumer's demand** is $y = 20 - p$.

(a) If the firm charges a traditional profit-maximizing per-unit price, what quantity and price maximize the profit from each consumer?
(b) How much profit does it make?
(c) If the firm uses a two-part tariff, charging $p = 2$ what entry fee will it charge?
(d) How much more profit does the firm make using a two-part tariff?

Exercise 7. A firm has a constant marginal cost of \$5 per unit so their cost function is $c(y) = 5y$. **Each consumer's demand** is $y = 30 - 2p$.

(a) If the firm charges a single price, what price will it charge and how much profit will it make?
(b) If the firm uses a two-part tariff, what entry fee will it charge?
(c) What per-unit price will it charge?
(d) How much more profit does the firm make using a two-part tariff?