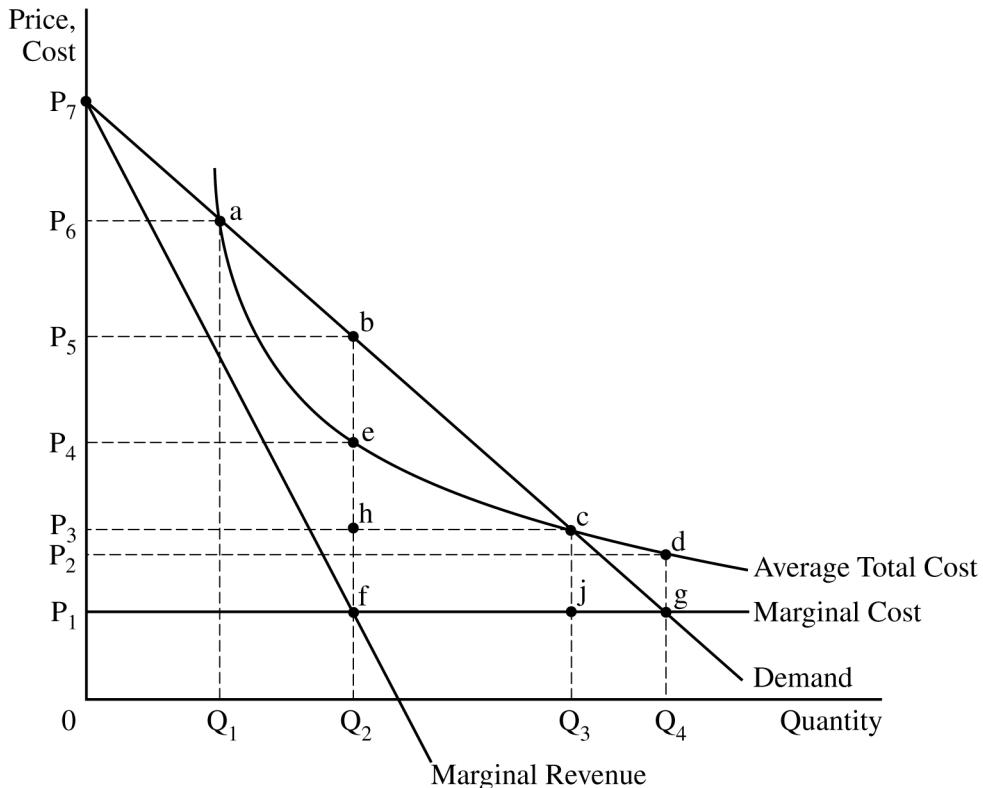


2. Keepdry produces and sells rain jackets in a perfectly competitive product market at the price of \$5 per jacket and hires all the workers it needs in a perfectly competitive labor market at the wage rate of \$15. Labor is the only variable input, and the firm's production schedule is provided in the table.

Number of Workers	Quantity of Output
0	0
1	9
2	20
3	27
4	32
5	34
6	35

- (a) Calculate the marginal revenue product of the second worker. Show your work.
- (b) Diminishing marginal returns will begin with the hiring of which worker?
- (c) Determine the profit-maximizing number of workers the firm should hire. Explain using marginal analysis.
- (d) Assuming Keepdry's fixed cost is \$40, calculate Keepdry's economic profit when hiring the profit-maximizing number of workers. Show your work.
- (e) Suppose Keepdry's fixed cost increases to \$80. Will the profit-maximizing number of workers hired in the short run increase, decrease, or stay the same? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.



3. The graph shows the cost and revenue curves for an unregulated, profit-maximizing monopoly.
- Is the firm shown in this graph a natural monopoly? Explain.
 - Using the labeling from the graph, identify the area representing the deadweight loss for this profit-maximizing monopoly.
 - In order to improve resource allocation, the government sets a price that results in the firm earning zero economic profit.
 - Using the labeling from the graph, identify the price and resulting quantity the firm would produce.
 - Will this government policy eliminate the deadweight loss? Explain using labeling from the graph.
 - Instead, the government decides to set a price that results in the socially optimal quantity of output. Will the firm earn positive, negative, or zero economic profit? Explain using labeling from the graph.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

Question 2: Short**5 points**

-
- (a) Calculate the marginal revenue product (MRP) of the 2nd worker as \$55 and show your work. **1 point**

$$\text{MRP}_{(\text{2nd worker})} = (\text{Marginal Product} \times \text{Marginal Revenue})$$

$$= (20 - 9) \times \$5 = 11 \times \$5 = \$55$$

-
- (b) State that diminishing marginal returns will begin with the hiring of the 3rd worker. **1 point**

- (c) State that the profit-maximizing number of workers is 4 and explain that the MRP of the 4th worker (\$25) is greater than the marginal factor cost (MFC) of the 4th worker (wage = \$15), and that the hiring of the 5th worker would decrease profits because the MRP (\$10) is less than the MFC of the 5th worker (\$15). **1 point**

-
- (d) Calculate the economic profit as \$60 and show your work. **1 point**

$$\text{Economic Profit} = \text{Total Revenue} - \text{Total Cost}$$

$$\text{Economic Profit} = \text{Total Revenue} - \text{Total Fixed Cost} - \text{Total Variable Cost}$$

$$\text{Economic Profit} = (\$5 \times 32) - \$40 - (\$15 \times 4)$$

$$= \$160 - \$40 - \$60 = \$160 - \$100 = \$60$$

-
- (e) State that the number of workers hired will stay the same and explain that the increase in fixed cost does not affect the marginal factor cost of producing rain jackets. **1 point**

Total for question 2 5 points