

Consider a market in which a good is produced using only labor. The production function is:

$$Y = -L^2 + 6L$$

where Y is the output of the good and L is the quantity of labor used. The price of the good is $p=1$. The labor supply, as a function of the real wage w is:

$$L^s = \frac{1}{2}w$$

3.1

5.0/5.0 points (graded)

Find the equilibrium wage and employment (w^c, L^c) that would prevail if the market for labor were competitive. Hint: Remember that a competitive firm takes the wage as given—it assumes that the quantity of workers that it hires has no effect on the price of the next worker. Remember also that the equilibrium wage must always, by definition, equate supply and demand. (2.5 points for each answer)

$w^c =$

✓ Answer: 3

$L^c =$

✓ Answer: 1.5

Explanation

The firm solves:

$$p \cdot Y - w \cdot L = 1 \cdot (-L^2 + 6L) - w \cdot L$$

Notice that the firm, since we are assuming it operates under perfect competition in the labor market, does not account for the labor supply curve. This is now an unconstrained maximization problem. The first order condition is:

$$-2L^c + 6 - w^c = 0 \Rightarrow L^c = \frac{6 - w^c}{2}$$

To ensure market clearing, we need to have:

$$L^c = L^s \Rightarrow \frac{6 - w^c}{2} = \frac{1}{2}w^c \Rightarrow w^c = 3$$

Plug $w^c = 3$ into either the demand curve L^c or the supply curve L^s , we get $L^c = 3/2$.

Submit

You have used 1 of 1 attempt

ⓘ Answers are displayed within the problem

3.2

5.0/5.0 points (graded)

Find the equilibrium wage and employment (w^m, L^m) that would prevail if the market for labor were monopsonistic. Hint: the firm is not a price-taker of wages now. (2.5 points for each answer)

$w^m =$

 Calculator

2

✓ Answer: 2

2

 $L^m =$

1

✓ Answer: 1

1

Explanation

The firm solves:

$$p \cdot Y - w \cdot L = 1 \cdot (-L^2 + 6L) - w \cdot L$$

Notice that, now, the firm accounts for the effect of its demand for labor on the supply for labor: the supply curve is a constraint on the profit maximization problem. Therefore, inverting the labor supply curve and substituting $w=2L$ into the problem, the firm solves:

$$= \max_L -L^2 + 6L - (2L)L$$

The first order condition is:

$$-6L^m + 6 = 0 \Rightarrow L^m = 1$$

Plug $L^m = 1$ into the labor supply curve L^s , we get $w^m = 2 \cdot L^m = 2$.

Submit

You have used 1 of 1 attempt

📌 Answers are displayed within the problem

3.3

5.0/5.0 points (graded)

Comparing the level of employment and the wage under monopsony versus under competition, which of the following is true?



The monopsonistic equilibrium has both a lower wage and a lower employment level than the competitive equilibrium.



In the monopsonistic equilibrium, the firm takes the market wage as given. Therefore, it continues to hire until the marginal product of labor is exactly the market wage.



When the firm hires an additional worker in a competitive market, they must increase their wage which incurs not only the wage for each additional employee but also the cost of increased wages for the current employees.



The firm in a competitive market faces an upward-sloping labor supply curve.



Explanation:

The monopsonistic equilibrium has both a lower wage and a lower employment level than the competitive equilibrium. In the competitive equilibrium, the firm takes the market wage as given. Therefore, it continues to hire until the marginal product of labor is exactly the market wage. When a monopsonist hires an additional worker, they must raise the wage, incurring not only the wage cost for the new employee but also the increased wage costs for the current employees. This additional cost leads the monopsonist to hire a smaller number of workers than would be the case in the competitive equilibrium. Because the monopsonist faces an upward-sloping labor supply curve, hiring fewer workers than in the competitive equilibrium means the monopsony wage is also lower than the wage under the competitive equilibrium.

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

3.4

0.0/5.0 points (graded)

Which of the following is the marginal cost curve of labor that the monopsonist faces?

☐ $w=2L$

☐ $w=4L$
✓

☒ $w=6-2L$

☐ None of the above.

✗

Explanation:

The labor supply curve L^S is $w=2L$ and the labor demand curve L^D is $w=6-2L$ (according to question 3.1). The cost of labor that the monopsonist faces is given by the wage multiplied by labor supplied from the labor supply curve:

$$w \cdot L = 2L \cdot L = 2L^2$$

Thus, the marginal cost curve of labor that the monopsonist faces is given by the derivative of the cost of labor:

$$w = \frac{d}{dL}(2L^2) = 4L$$

Submit

You have used 1 of 1 attempt

Answers are displayed within the problem

3.5

5.0/5.0 points (graded)

Suppose that all of the monopsonist's competitors in the product market suddenly shut down. Instead of taking the output price p as given, the monopsonist has monopoly power in the product market. That is, the firm now faces a downward-sloping demand curve $p(Y)$ with $p'(Y) < 0$ in the product market.

Compared to the scenario where the monopsonist faces a competitive product market, which of the following statements is likely to be true? (5 points)

☐ Product market power is a force for selling fewer units.

☐ The firm might hire less labor because less labor is required in producing fewer units, and this would lower the equilibrium wage.

☐ The price of the good is higher with product market power, and this higher price increases the effective marginal product of labor, which is a countervailing force that increases labor demand.

☒ All of the above.

✓

Calculator

Explanation:
Product market power is a force for selling fewer units. Producing fewer units requires less labor. Because the firm is a monopsonist, hiring less labor lowers the equilibrium wage. On the other hand, the price of the good is higher with product market power. This higher price increases the effective marginal product of labor, which is a countervailing force that increases labor demand.

Submit

You have used 1 of 1 attempt


 Answers are displayed within the problem


Discussion

Hide Discussion


Topic: Problem Set 1 / Question 3

Add a Post

Show all posts 

by recent activity 

There are no posts in this topic yet.



 Previous

Next 