

Microeconomics – Extra Questions

Answers – All Weeks

If you have any questions, feel free to ask on the group chat 😊

Meeting 1:

1. B

Comment:

Normal goods – demand increases as consumer income increases.

Inferior goods – demand decreases as consumer income increases.

Thus, when income increases: demand for good AAA (normal) increases and demand for good BBB (inferior) decreases.

2. A

Comment: The optimal consumption bundle is determined by:

Set MRS equal to the slope of the budget constraint to maximize utility (MRS = m)

$$(0.5/0.5) = (4x/y) \rightarrow y = 4x$$

$$4x + y = 100 \rightarrow 4x + 4x = 100 \rightarrow 8x = 100 \rightarrow x = 12.5$$

$$y = 4x \rightarrow y = 4(12.5) = 50$$

3. C

Comment: We first take the budget constraint and figure out its slope and then set it equal to the slope of the utility function and solve for one of the unknowns (x or y). Subsequently, we plug the result into the budget constraint to solve for the other variable.

4. D

Comment: In a perfectly competitive market, each firm is a price taker and faces a perfectly elastic demand curve.

Price elasticity of demand: for a perfectly elastic demand, $\epsilon = -\infty$, in some contexts, treated as 0 because the firm can sell any quantity at the market price but cannot influence the price.

However, the more accurate representation is that the elasticity is infinite (perfectly elastic).

5. B

Comment: Opportunity cost = loss in B/gain in A. in this case, when considering the opportunity costs of answering economics questions (A), loss in B is defined as the number of accounting questions not answered (3). Gain in A is defined as the economics questions you answer (2). This results in an opportunity cost of answering economics questions of: 3/2 accounting questions.

Meeting 2

1. B

Comment: The substitution effect measures the change in demand from a price change, excluding the income effect. Here, the total increase is 20 units, with 5 units attributed to the income effect. The substitution effect, therefore, accounts for the remaining 15 units.

2. C

Comment: the production function $Q = K^{0.5} L^{0.5}$ exhibits constant returns to scale. To double output, the firm must double both inputs K and L. Therefore, the correct answer is 2.

3. A

Comment: the MRTS represents how much of one input (e.g. capital) can be replaced by another (e.g. labor), while maintaining the same level of output.

4. B

Comment: Since the percentage of income spent on Good Z increases with income, it indicates that Z is a luxury good.

5. C

Comment: First, Calculate the income effect in units. The initial consumption was 25 units and a 4% income effect results at an increase of $25 * 0.04 = 1$ unit. The total change in demand is 10 units (from 25 to 35). Subtracting the income effect of 1 unit, the substitution effect is $10 - 1 = 9$ units.

Meeting 3:

1. C

Comment: Marginal cost, MC, is the derivative of the total cost function with respect to Q. Taking the derivative, MC equals $20 + Q$. Substituting $Q = 20$ gives MC equals $20 + 20 = 40$.

2. A

Comment:

LAC are given as the division of TC / Q and cost are $TC = 1000 + 60Q + 0.2Q^2$.

$LAC = (1000 + 60Q + 0.2Q^2) / Q$.

To find the minimum LAC, take the derivative of LAC with respect to Q and set it equal to 0:

$$(-1000 + 0.2) / Q^2 = 0.$$

Rearrange for Q: $1000 / Q^2 = 0.2$

$Q = \sqrt{5000} = \text{approximately } 70.71$.

3. D

Comment: $ATC = TC / Q \Rightarrow (100 + 4Q + 0.5Q^2) / Q \Rightarrow (100 / Q) + 4 + 0.5Q$.

To find the minimum point of ATC, take the derivative of ATC with respect to Q and set it to 0:

$$(-100 / Q^2) + 0.5 = 0$$

Rearrange for Q:

$$100 / Q^2 = 0.5$$

$Q = \sqrt{200} = \text{approximately } 14.14$.

4. D

Comment: LAC are given as the division of TC / Q and cost are $TC = 1200 + 30Q + 0.1Q^2$.

$$LAC = (1200 + 30Q + 0.1Q^2) / Q.$$

To find the minimum LAC, take the derivative of LAC with respect to Q and set it equal to 0:

$$(-1200 + 0.1) / Q^2 = 0.$$

Rearrange for Q:

$$1200 / Q^2 = 0.1$$

$$Q = \sqrt{12000} = \text{approximately } 109.54.$$

5. A

Comment: MES is the smallest level of output at which a firm can produce at minimum long run average cost.

Meeting 4:

1. C

Comment: A binding price floor reduces the quantity traded below the equilibrium level, resulting in deadweight loss due to lost consumer and producer surplus.

2. B

Comment: To maximize profit, set marginal cost (MC) equal to price. The marginal cost is derived from the total cost function as $MC = d(TC)/dQ = 10 + 2Q$. Setting $MC = 30$

$$10 + 2Q = 30 \rightarrow Q = 10$$

3. A

Comment: Deadweight loss from a price ceiling is calculated as the lost surplus from the quantity reduction. The lost surplus is:

$$DWL = 0.5 * \text{Price Difference} * \text{Quantity Reduction} = 0.5 * (20 - 15) * (100 - 80) = 0.5 * 5 * 20 = 50$$

4. D

Comment: The average total cost is minimized where the derivative of ATC with respect to Q is zero. First, find

$$ATC = (100 + 5Q + 0.2Q^2)/Q = 100/Q + 5 + 0.2Q$$

Take the derivative and set it to zero to solve for Q, which gives $Q=25$.

5. B

Comment: In the long run, firms produce where price equals marginal cost (MC). The MC is derived from the total cost function as $MC = d(TC)/dQ = 20 + Q$.

Setting $MC=40$:

$$20 + Q = 40 \rightarrow Q = 20$$

Meeting 5:

1. C
2. A
3. B
4. A
5. D

Meeting 6:

1. A
2. B
3. A
4. B
5. B