

Self-Test 4 (KEY)

Monopoly & Market Efficiency

The tasks in this self-test are designed to be solvable by any student who has mastered the material. The answers provided are written instructionally to walk you through the problem-solving process for each task. A well-prepared student should score between 9 and 11 out of 12 without assistance from AI or others. A 12 out of 12 — without help — requires outlier performance or sheer luck. This self-test is optional, and your result will not count towards your grade. Direct any questions to your section's TA.

1. The only patisserie in a town faces the following demand for black forest cakes. What is the profit-maximizing quantity for the seller if $MC = \$10$?

Q_D	0	1	2	3	4	5	6
P	\$50	\$45	\$40	\$35	\$30	\$26	\$23

- A. Zero.
- B. 1 cake.
- C. 2 cakes.
- D. 3 cakes.
- E. 4 cakes.
- F. 5 cakes.**
- G. 6 cakes.

[Profit maximization occurs at $MR = MC$, so we should look at which quantity $MR = \$10$.]

Q_D	0	1	2	3	4	5	6
P	50	45	40	35	30	26	23
$R = p \cdot Q$	0	45	80	105	120	130	138
MR	-	45	35	25	15	10	8

We can observe that this happens at the 5th unit]

2. Following from the previous question, what will the seller's profit be if $FC = \$40$?

- A. Zero.
- B. Around \$10.
- C. Around \$20.
- D. Around \$30.
- E. Around \$40.**
- F. Around \$50.

$[R = 5 \cdot \$26 = \$130. C = 5 \cdot \$10 + \$40 = \$90. \text{Profit} = \$130 - \$90 = \$40]$

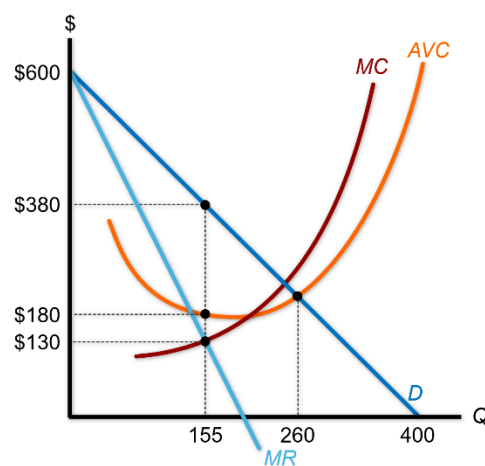
3. Which of the following is always true for a monopolist?

- A. A change in market demand does not affect the profit-maximizing price. *[Market demand changes shift the demand and MR curves, which alter the profit-maximizing price]*
- B. The monopolist's marginal revenue is less than the price.** *[To sell an additional unit, the monopolist must lower the price on all units sold, so the additional revenue from selling one more unit is less than the price received for that unit]*
- C. Both A and B.
- D. None of the above.

4. Which of the following is a barrier to entry?

- A. A company holding a patent that prevents competitors from producing a generic version of its product. *[Legal barrier — the patent grants exclusive legal rights]*
- B. A large retailer benefiting from economies of scale that small competitors cannot match. *[Economic barrier — economies of scale]*
- C. A mining company controlling exclusive access to a rare mineral deposit. *[Production barrier — exclusive resource access]*
- D. A social media platform whose value increases as more users join, making it hard for new platforms to compete. *[Economic barrier — network effects]*
- E. **All of the above.** *[All four are valid barriers to entry, spanning legal, production, and economic types]*

5. The market for ocean fiber cable is described in the graph. What is the price elasticity of demand when the manufacturer sells 260 km of cable per month?



- A. $-\infty$.
- B. Around -1.5.
- C. -1.
- D. **Around -0.5.**
- E. Zero.

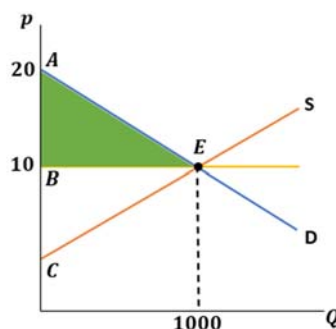
[At $q = 260$, the MR is negative — selling additional units at a lower price reduces total revenue. By the relationship between MR and elasticity, $MR < 0$ corresponds to inelastic demand: $-1 < \epsilon < 0$. Of the options given, only -0.5 falls in this range]

6. Following from the previous question, how much will the maximum profit for the monopolist be if the fixed cost is \$5,000?

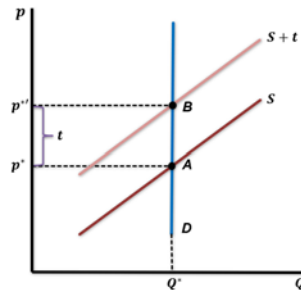
- A. Around \$5,000.
- B. Around \$10,000.
- C. Around \$15,000.
- D. Around \$20,000.
- E. **Around \$25,000.**
- F. Around \$30,000.

[The monopolist will sell 155 km at \$380 each. Monthly revenue is $155 \cdot \$380 = \$58,900$. From the AVC curve, $AVC = \$180$, so $C = \$5,000 + 155 \cdot \$180 = \$32,900$. Thus, the profit per month for the monopolist will be $\$58,900 - \$32,900 = \$26,000$]

7. Which of the following is an example of rent-seeking?
- A. The market power Changi airport has in SE Asia. *[Changi's market power comes from efficiency, investment and service quality]*
 - B. The fee Singapore paid Taylor Swift to refrain from holding any of her 2024 concerts in other SE Asian countries.** *[Singapore paid Taylor Swift to exclude other countries from hosting her, capturing tourism revenue that would otherwise have been spread across the region]*
 - C. The high price of a specialized cancer drug. *[The high price reflects research costs, innovation, and value creation]*
 - D. All of the above.
8. Suppose that the production of the new iPhone has constant $AVC = \$140$. What will the profit-maximizing price be if the elasticity of demand for the iPhone is -1.1 ?
- A. Around \$600.
 - B. Around \$900.
 - C. Around \$1,200.
 - D. Around \$1,500.**
 - E. Around \$1,800.
 - F. We have insufficient information to answer.
- [When AVC is constant, $MC = AVC = \$140$. Using the markup rule $p = MC \cdot [1 + (-1)/(1 + \epsilon_d)]$
 $= 140 \cdot [1 + (-1)/(1 - 1.1)] = 140 \cdot [1 + 10] = \$1,540$]*
9. In a perfectly competitive market, which of the following graphically represents producer surplus?
- A. The area between the market demand curve and the equilibrium price line. *[This area represents consumer surplus]*
 - B. The area between the market supply curve and the equilibrium price line.** *[From the standard definition]*
 - C. The area below the market supply curve up to the equilibrium quantity. *[This area represents the total variable cost of production]*
 - D. The area above the market price of a good and below the demand curve. *[This area represents consumer surplus]*
10. The market demand curve for a good is linear with a vertical intercept at \$20. What is the consumer surplus when the price is \$10 and the quantity demanded is 1,000 units?
- A. Around 500.
 - B. Around 1,000.
 - C. *Around 5,000.**
 - D. Around 10,000.
- [Consumer surplus is the area of the triangle ABE. The height is $\$20 - \$10 = \$10$ and the base is 1,000 units, so the area is $\frac{1}{2} \cdot 10 \cdot 1,000 = \$5,000$]*



11. Which of the following problems would a legal market for human organs most likely address?
- A. The deadweight loss in the current organ allocation system. *[A market would allow mutually beneficial trades that currently do not occur, reducing the deadweight loss]*
 - B. The black market for organs and the associated criminal activity. *[A legal market would draw transactions out of the black market, reducing illicit trade and the dangers associated with it]*
 - C. **Both of the above.**
 - D. None of the above.
12. If a good's demand curve is perfectly inelastic (vertical) and its supply curve is upward sloping, which of the following is accurate when a tax is imposed on the good?
- A. The burden of the tax will be split between the consumer and the producer.
 - B. The burden of the tax will fall on the producer only.
 - C. **The burden of the tax will fall on the consumers only.**
 - D. The burden of the tax will be paid by the government.
- [As shown in the figure, the supply curve shifts up by the full amount of the tax to $S + t$. Since the demand curve is perfectly inelastic, the equilibrium quantity stays at Q^* , while the equilibrium price rises from p^* to $p^{*'} by the full amount of the tax. Consumers bear the entire burden]$*



Good afternoon! Most people believe that success is the result of smart decisions. In reality, this couldn't be further from the truth. People succeed in many different ways, following vastly different paths or even making opposite decisions. However, there is one trait that all successful people share: developing winning habits. Like it or not, it's your habits that determine whether you become a winner or a loser—not your decisions. Losers learn to require constant reminders, start working only when the deadline approaches, and do only the bare minimum, aiming merely to “get by”. In contrast, winners are habitually on top of their own schedule, never need a deadline to get the job done, and always strive for excellence. You might not be ready to accept this yet, but the way you approach this very homework now is the same way you'll approach a business project tomorrow or even your own company in the future. So, quit deceiving yourself by thinking: “I'll just half-ass this homework because it doesn't matter much, but I'll do my best later when it really counts.” This never works for two reasons. First, in real life, you never know in advance how much something will end up mattering. Second, it leads to the development of loser habits that will follow you forever. Do yourself a favor and break those habits now while it's still early.

Kosmas

Please report any typos, mistakes, or suggestions for improvement to kmarinakis@smu.edu.sg.