

Final Solutions

Multiple Choice

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|------|-------|-------|-------|
| 1. a | 6. b | 11. d | 16. d |
| 2. d | 7. b | 12. c | 17. d |
| 3. d | 8. d | 13. b | 18. d |
| 4. d | 9. c | 14. d | 19. a |
| 5. b | 10. c | 15. d | 20. c |

Problem V.

a) Both firm 1 and firm 2 have marginal cost of 10.

b) Since the (inverse) demand curve has equation $P = 70 - Q$, the equation for marginal revenue is given by $MR = 70 - 2Q$. Equating marginal revenue and marginal cost yields $Q^M = 30$. Substituting this output back into the demand curve yields $P^M = 40$.

c) Firm 1's residual demand curve is given by $P = (70 - Q_2) - Q_1$. The marginal curve revenue for this residual demand curve is given by $MR = (70 - Q_2) - 2Q_1$. Equating marginal revenue with marginal cost yields $Q_1^R = 30 - Q_2/2$. Since the firms have the same cost function, the equilibrium is symmetric, i.e., $Q_1 = Q_2$. Using this fact, we conclude that firm output in Cournot equilibrium is 20, industry output is 40, and, hence, price is 30.

Problem VI.

a) Short run marginal cost is unaffected. Hence, industry supply is unchanged in the short run. Thus, there is no change in the product price.

b) Minimum long run average cost clearly increases. If firms continued to produce at 100 units of output, then minimum average cost would rise by $10 = 1000/100$. However, the efficient scale increases (See part d). Hence, minimum long run average cost goes up but by less than 10.

c) Since land is a fixed input, even in the long run, there is no effect on long run marginal cost.

d) Average cost rises. Marginal cost is unchanged. Hence the output where average costs is minimized must go up.

e) The product price rises, by the amount that minimum average cost increases.

f) With a higher product price, there is less quantity demanded. Since the efficient scale of the firm has increased, there must be exist.