

Economics 308: Intermediate Microeconomics
Department of Economics, Finance and Legal Studies
University of Alabama
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Midterm II

1. A firm purchases capital and labor in competitive markets at prices of $r=4$ and $w=6$, respectively. With the firm's current input mix, the marginal product of capital is 12 and the marginal product of labor is 18. Does this firm satisfy the necessary condition of minimizing its costs? If so, explain how you know. If not, explain what the firm ought to do.
2. Suppose the demand function for a good is given by $q = 100/p$. What price will maximize revenue?
3. Consider the following production function: $q = L + K$. Show whether this production function exhibits increasing, decreasing or constant returns to scale.
4. True or False (Explain briefly and use an example and/or state assumptions if necessary)? If a firm satisfies its profit maximizing condition, it is necessarily making positive economic profit (use a graph).
5. True or False (Explain briefly and use an example and/or state assumptions if necessary)? If a firm had decreasing returns to scale at all levels of output and it is divided up into two equal-size smaller firms, its overall profits would decrease.
6. A machine that costs \$100 will yield returns of \$30 at the end of each of the next 3 years, at which time it will be sold as scrap for \$30. If the interest rate facing this firm is zero percent and there are no maintenance costs, should it purchase this machine? Now, suppose the interest rate doubles each year, should it purchase this machine?