

4. Suppose that a firm's production function is given by $Q = K^{0.33}L^{0.67}$, where $MP_K = 0.33K^{-0.67}L^{0.67}$ and $MP_L = 0.67K^{0.33}L^{-0.33}$.
- As L increases, what happens to the marginal product of labor?
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 - Why would the MP_L change as K changes?
 - What happens to the marginal product of capital as K increases? As L increases?
 - Given the production function in this problem, show that the marginal products are as given using calculus.
 - Re-answer part (a) using calculus.
 - Re-answer part (b) using calculus.
 - Re-answer part (d) using calculus.
 - Find the marginal rate of technical substitution and discuss how $MRTS_{LK}$ changes as the firm uses more L , holding output constant.