

系所組別 經濟學系
 考試科目 個體經濟學

考試日期：0307 · 節次：2

※ 考生請注意：本試題 可 不可 使用計算機

- A visitor to a recreation site has the utility function $U(C, v)$ where v is visits to the site and C is consumption of all other goods. For convenience, set the price of C equal to 1; the recreation site has an entrance fee P . So the visitor's budget constraint is $C + Pv \leq I$, where I is (exogenous) income.

 - Write out the Lagrangian and find the first-order conditions for the visitor's utility-maximization problem. Give an economic interpretation for the first-order conditions. (20%)
 - Show that $\partial v^* / \partial P$ is not signable in general. (10%)
 - Show that if visits are a normal good, then $\partial v^* / \partial P < 0$. (10%)
- Let the cost function be $V = 100 + 4q + 4q^2$. Is there any range of production characterized by scale economics? At what production level are scale economics exhausted? (10%)
- Let the market demand for widgets be described by $Q = 1000 - 50P$. Suppose further that widgets can be produced at a constant average and marginal cost of \$10 per unit.

 - Calculate the market output and price under perfect competition and monopoly respectively. (10%)
 - What is the elasticity of demand in the competitive equilibrium by the point elasticity of demand? (5%)
 - What is the elasticity of demand in the monopoly equilibrium by the point elasticity of demand? (5%)
- Consider the following specific CES production function defined on $x_1 > 0, x_2 > 0$:

$$y = f(x_1, x_2) = [0.3x_1^{-2} + 0.7x_2^{-2}]^{-1/2}$$
 - Find an expression for the MRTS, and show that isoquants are strictly convex to the origin. (10%)
 - Show that f is homogenous, and find its degree of homogeneity. (10%)
 - Find the elasticity of substitution between the inputs. (10%)