Development Economics
City University, Spring 2007
Problem set 1

Harrod Domar and Solow

A) Assume that in a given country, the production function f(.) is such that output per capita, y, depends on the level of capital per capita, k, in the following way:
$y = f(k) = k^{\alpha}$
where $0 < \alpha < 1$.
1) if one additional unit of k is used, by how much does y increase?
2) Show that f(.) is a concave function.
3) Does the production function exhibit constant, diminishing, or increasing returns to per capita capital?
4) Explain in words what the type of returns to scale you've chosen at question 3 means.
5) What does this imply for the growth of y in the Solow model?

B) Now, let $\alpha = 1$, so that $y = f(k) = k$.
1) if one additional unit of k is used, by how much does y increase?
2) Does the production function exhibit constant, diminishing, or increasing returns to per capita capital?

C) « According to the Harrod Domar model, income per capita cannot grow without techonlogical progress ». Is this statement true or false?

D) « According to the Solow model, government policies that encourage savings, by making more funds available for investment, boost growth ». Is this statement true or false?