

## Exercise 4

**Problem 1:** Consider the heterogeneous firm trade model as pioneered by Melitz (Econometrica 2003):

- a) Assume that productivity is drawn from a Pareto distribution, that is the density function takes the form

$$g(\varphi) = \frac{k(\varphi_m)^k}{\varphi^{k+1}} \quad (1)$$

where  $\varphi_m$  is the lower bound of the support. The cdf is thus of the form

$$G(\varphi) = 1 - \left(\frac{\varphi_m}{\varphi}\right)^k \quad (2)$$

Formally derive the entry and export market cutoffs  $\varphi^*$  and  $\varphi_x^*$  as well as the equilibrium number of firms, and show how these variables respond to changes in the trade cost, both variable and fixed.