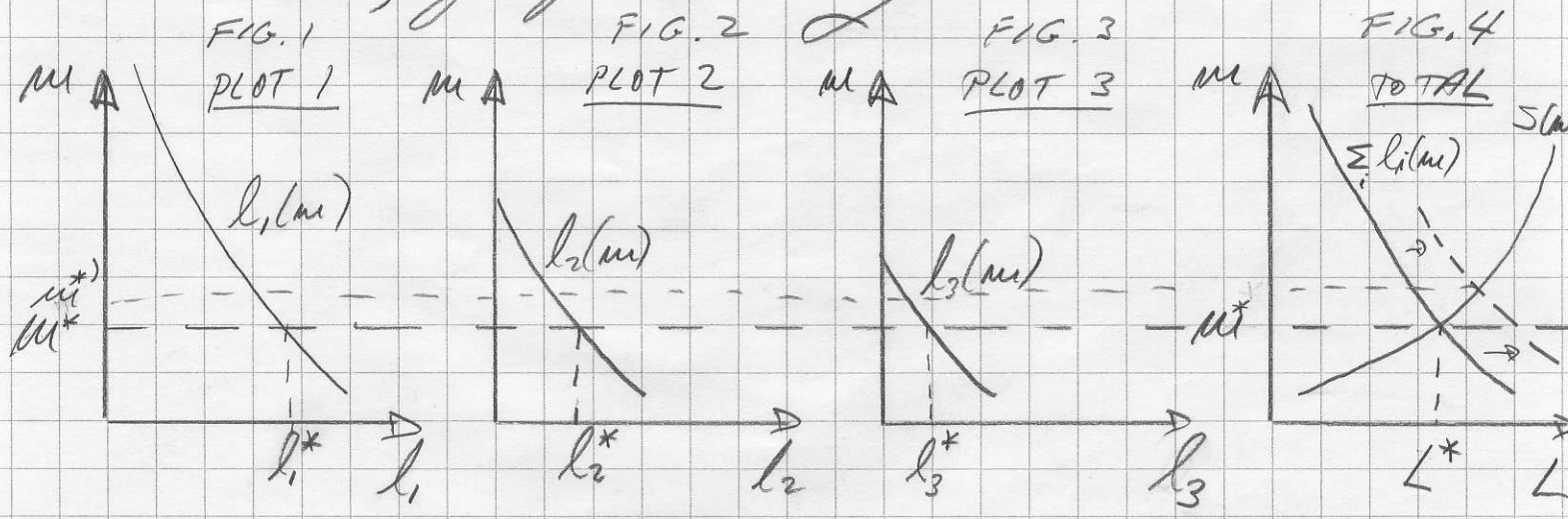
# Rents, heterogeneous land and labor supply elasticity

(1) Rents on a plot of land $i$ are determined by the choice of workers $l_i^*$ such that $f_i'(l_i^*) = w$. Hence, $l_i^* = l_i(w)$.

The total supply of workers being $S(w)$, the equilibrium is determined by the value of $w$ such that:

$$\sum_i l_i(w) = S(w).$$

With three plots of land, we have, graphically:



(2) In part (1), land rents are given by the area under the marginal product curve $L_i(w)$ minus $w\bar{L}_i$. We see that some plots yield larger returns than others. This is possible in equilibrium because land plots cannot be "reproduced". In the case of physical capital, rents have to be equalized because one could "replicate" the high return capital stocks (at least we usually assume so).

(3) Adding a fourth plot:

i) With perfectly elastic supply of labor, the wage is unchanged. This implies that rents are not affected while more workers work on the land.

ii) With elastic supply, the $\sum \bar{L}_i$ curve shifts to the right, thus increasing the wage rate. This lowers the rent on the initial three plots, but workers are better off with the higher wage.

iii) With inelastic supply, we get the same result as in ii) except that the wage goes up further.