The following diagram depicts a total product of labor curve (the graph of $TP_\ell(\ell)$) for a firm whose capital input is $k = \bar{k}$:

At approximately what level of labor input:

1. is the marginal product of labor ($MP_\ell(\ell)$) zero? Why?
2. does the marginal product of labor reach a maximum? Why?
3. does the average product of labor ($AP_\ell(\ell)$) reach a maximum? Why?
4. are the marginal and average products of labor equal? Why?