

## Quiz 2

- 1) Consider 2 individuals who consume two goods:  $x$  and  $y$ . The utility function of individual 1 is

$$u_1(x_1, y_1) = \ln(x_1) + y_1$$

and the utility function of individual 2 is

$$u_2(x_2, y_2) = \sqrt{x_2 y_2}.$$

The initial endowments of individual 1 is  $(2,0)$  which means she has 2 units of  $x$  and 0 unit of  $y$ . The initial endowments of individual 2 is  $(1,3)$  which means she has 1 units of  $x$  and 3 unit of  $y$ .

- Calculate the marginal rate of substitution for both individuals.
- Show that no-trade (consuming initial endowments) is not Pareto-efficient.
- Suppose that individual 1 offers "Give 1 small unit of  $y$  and I will give you 1 small amount of  $x$ ". Would they benefit from this trade?
- Suppose the price of  $x$  is  $p_x$  and the price of  $y$  is  $p_y$ . Find the demand for  $x$  by individual 1 and individual 2.
- Compute the competitive equilibrium.

2) Solve the same questions assuming

$$u_1(x_1, y_1) = \ln(x_1) + y_1$$

and the utility function of individual 2 is

$$u_2(x_2, y_2) = \sqrt{x_2} + \sqrt{y_2}.$$