Consider the following economy

Consumers: 1 and 2

Goods: A, B, C.

Technology

Good A is produced out of good C with production function $A = 2\theta\sqrt{C}, 0 < \theta < 1$

Preferences/endowments/consumption sets

$u_1 = B_1, e_1 = (0,0,\gamma), B_1 \geq 0$

$u_2 = \min(A_2, B_2), e_2 = (0,\beta,0), A_2 \geq 0, B_2 \geq 0$

(Goods in the endowment vectors are written in the order A, B, C).

Consumer 2 is the sole owner of the firm.

1. Compute all competitive equilibria for all values of the parameters $\beta > 0, \gamma > 0, 0 < \theta < 1$,

2. For which values of the parameters β, γ, if any, will an increase in the productivity θ of agent 1 reduce his equilibrium utility?