$$egin{cases} U(x_1,x_2) = (lpha x_1^eta + (1-lpha) x_2^eta)^{1/eta} \longrightarrow \max_{x_1,x_2} \ I = x_1 P_1 + x_2 P_2 \ 1 > lpha > 0 \end{cases}$$

$$U_{x_1}' = rac{(lphaeta x_1^{eta-1} - rac{(1-lpha)eta P_1(rac{I-P_1x_1}{P_2})^{eta-1}}{P_2})(lpha x_1^{eta} + (1-lpha)(rac{I-P_1x_1}{P_2})^{eta})^{eta^{-1}-1}}{eta} = 0$$

$$\left[egin{array}{c} lphaeta x_1^{eta-1} - P_2^{-1}(1-lpha)eta P_1(rac{I-P_1x_1}{P_2})^{eta-1} = 0 \ lpha x_1^{eta} + (1-lpha)(rac{I-P_1x_1}{P_2})^{eta} = 0 \end{array}
ight.$$

$$lphaeta x_1^{eta-1}P_2=(1-lpha)eta P_1 x_2^{eta-1}$$

$$rac{x_1}{x_2} = (rac{(1-lpha)P_1}{lpha P_2})^{rac{1}{eta-1}}$$