Question #63692 - Economics – Microeconomics | Completed

Question

Steve's utility function is U = BC, where B = beer cans per week and C = pack of cigarettes per week. As a result, his marginal rate of substitution is MRS = -B/C, where beer is on the vertical axis and cigarettes are on the horizontal axis. Steve's income is $120, the price of a can of beer is $2 and that of a pack of cigarettes is $1. [In answering the following, use graphs and math.]
A. How many cans of beer and packs of cigarette does Steve consume? (12)
B. Due to a new tax, the price to Steve of a can of beer rises to $3. Now how much beer and how many packs of cigarettes does Steve consume? (13)

Answer

A) Optimal Steve's consumption is in the point $MU_B/P_B=MU_C/P_C$,

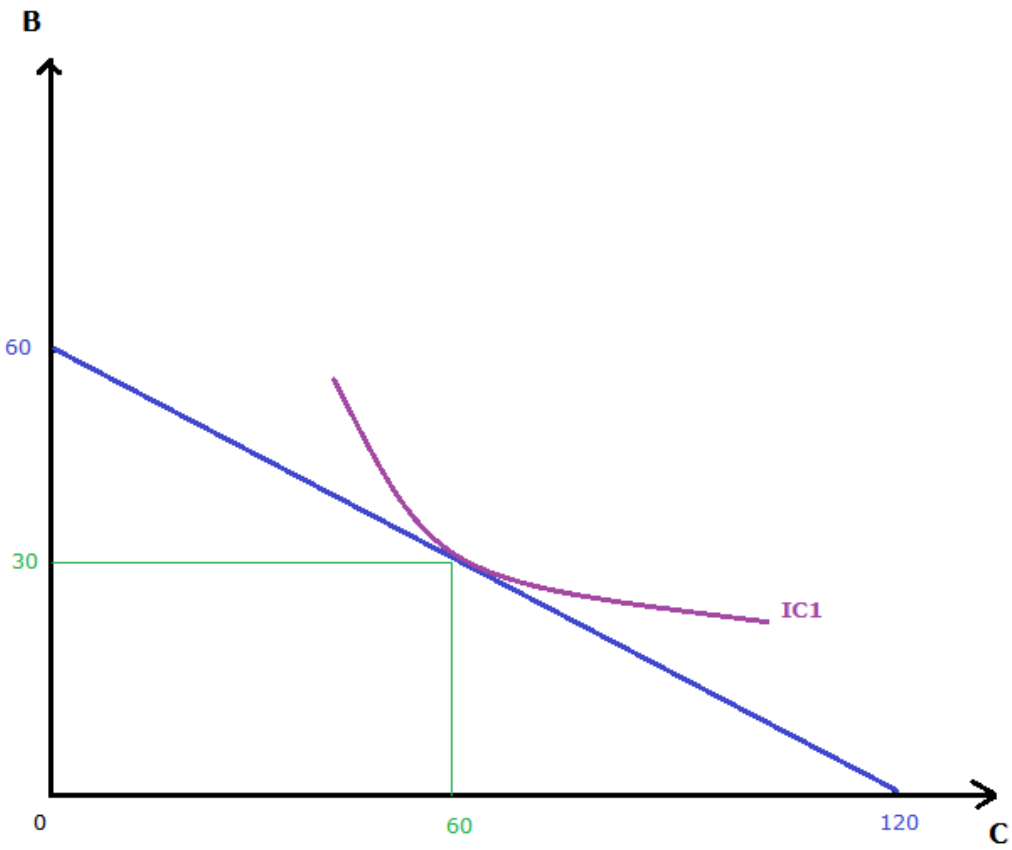
Steve's budget equation: $I=P_B*B+ P_C*C$ => $2B+C=120$,

where $MU_B=dU/dB=C$, $MU_C=dU/dC=B$

$MU_B/P_B=MU_C/P_C$ => $C/2=B$, put "$B=C/2$" into $2B+C=120$ => $2*(C/2)+C=120$ => $2C = 120$ =>

=> **C=60**, **B=**C/2**=30**

On the graph:



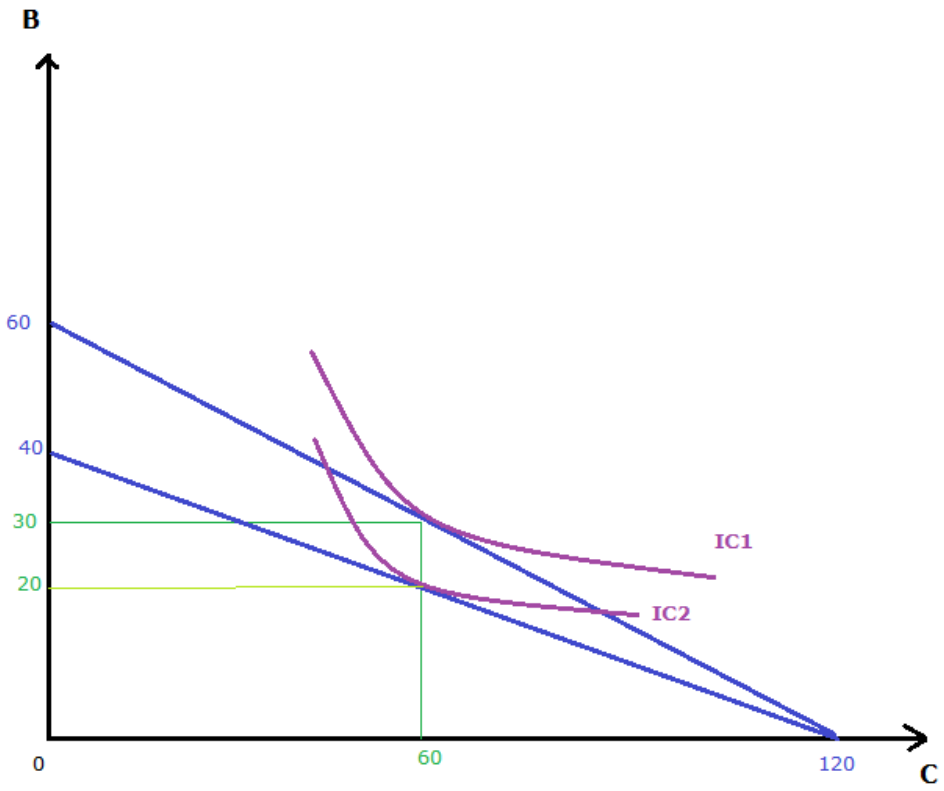
B) Steve's budget equation: $I=P_B*B+ P_C*C$ => $3B+C=120$,

where $MU_B=dU/dB=C$, $MU_C=dU/dC=B$

$MU_B/P_B=MU_C/P_C$ => $C/3=B$, put "$B=C/3$" into $3B+C=120$ => $3*(C/3)+C=120$ => $2C = 120$ =>

=> **$C=60$**, **$B=C/3=20$**

On the graph:



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