Econ 301
R In-class #6 (10 pts.)
Deiter
Fall 2009

Names Key

A. Assume Dolly Nogood is a grade-school student who has a monthly allowance (I = income) for recess snacks of $20. In all of the questions below, assume S is the vertical axis variable and I = $20. She is deciding how to spend her income on S = cans of soda pop and C = candy bars for which her utility function is given as $U = S^{1/2}C^{1/2}$. The price of S = $1.00 and the price of C = $1.00.

A1. If Dolly consumes S = 10, how much C at a maximum can she consume? What level of utility is Dolly achieving and what is her MRS (soda for candy) at that point? $20 = 1S + 1C \Rightarrow C = 20 - S \Rightarrow C = 20 - 10 = 10 = \text{Max } C$

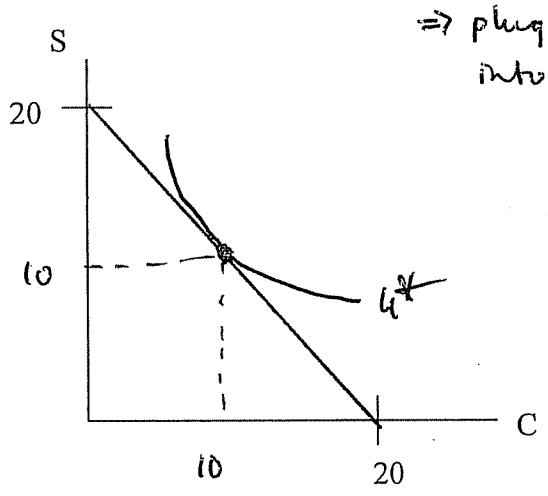
$U = S^{1/2}C^{1/2} = (10)^{1/2}(10)^{1/2} = 10^1 = 10 = U$

$MRS = \frac{MU_C}{MU_S} = \frac{\frac{1}{2}S^{1/2}C^{-1/2}}{\frac{1}{2}C^{1/2}S^{-1/2}} = \frac{S}{C} = \frac{10}{10} = 1 = MRS$

A2. Show Dolly's 'equal slopes condition' for maximizing her utility is C = ~~S~~ S

$\Rightarrow \frac{MU_C}{MU_S} = \frac{P_C}{P_S} \Rightarrow \frac{S}{C} = \frac{1.00}{1.00} \Rightarrow S = C$ or $C = S$

A3. Show mathematically and graphically (in graph below), the attainable quantities of S and C that will maximize Dolly's utility?



$\Rightarrow$ plug equal slopes condition into budg equation

$\Rightarrow 20 = S + C$

$\Rightarrow 20 = C + C$

$\Rightarrow 2C = 20$

$\Rightarrow C = 10$

$\Rightarrow S = C = 10$

B. Assume Dolly is not going to buy soda and candy but instead she is deciding how to spend her income on S = cans of soda and P = bags of popcorn for which her utility function is given by U = min [10S, 10P]. The price of S = $1.00 and the price of P = $1.00.

B1. What attainable quantities of S and P will maximize Dolly's utility?

= pt of intersection betw budget line and pts where $10S = 10P$

$\Rightarrow S = P$

$20 = 1S + 1P \Rightarrow 20 = 1S + 1S \Rightarrow 2S = 20 \Rightarrow S = 10$

$\Rightarrow P = 10$

B2. Show your answer to B1 in the graph below.