Econ 301
Deiter, F09
R IC #4 (10 pts)

Names Key

Assume B. Bop enjoys eating either hamburger 'meals' or pizza 'meals' and shopping every work day over the noon hour. For a given month, let:

Y	=	quantity of hamburger 'meals' pruchased
X	=	quantity of pizza 'meals' purchased
Z	=	hours spent shopping
P_y	=	the price or cost of one hamburger meal
P_x	=	the price or cost of one pizza meal
P_z	=	the cost of one hour of shopping
I	=	income that B. Bop has to spend on lunch

Assume the following cases or possible situations where * denotes a change from case #1.

Case	P_Y	P_X	I
1	2	5	200
2	2	5	400*
3	2	10*	200
4	4*	5	200

1. Derive the math equations that represent the budget constraints associated with each case (w/Y on the left-hand side).

$Y = \frac{I}{P_Y} - \frac{P_x}{P_Y} X \Rightarrow$

1) $Y = 100 - 2.5X$
2) $Y = 200 - 2.5X$
3) $Y = 100 - 5X$
4) $Y = 50 - 1.25X$

2. Draw the budget lines in each of the attached graphs as follows:

Case 1 in Figures A, B, C; label I_1
Case 2 in Figure A; label I_2
Case 3 in Figure B; label I_3
Case 4 in Figure C; label I_4

See graphs

3. What is the numerical value of the slope of the budget line for Case 1 and explain the economic meaning of the slope number.

$Y = 100 - 2.5X$

$\text{slope} = \frac{dy}{dx} = -2.5 \Rightarrow$ 2.5 hamburger meals can be exchanged for 1 pizza meal

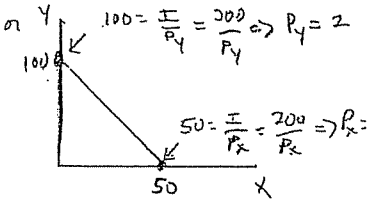
4. Assume B. Bob's budget constraint of $200 is given by $Y = 100 - 2X$. In this situation, what is the cost to B. Bop of one hamburger meal (P_Y) and one pizza meal (P_X)?

$Y = 100 - 2X$

$\frac{I}{P_Y} = \frac{200}{P_Y} = 100 \Rightarrow P_Y = 2$

$\frac{P_x}{P_Y} = 2 \Rightarrow \frac{P_x}{2} = 2 \Rightarrow P_x = 4$

or



$100 = \frac{I}{P_Y} = \frac{200}{P_Y} \Rightarrow P_Y = 2$

$50 = \frac{I}{P_x} = \frac{200}{P_x} \Rightarrow P_x =$

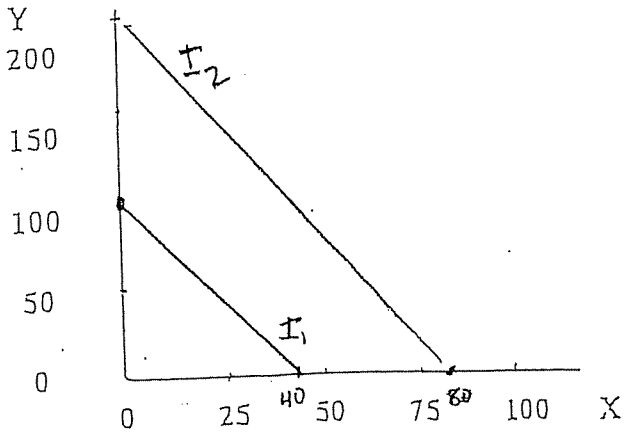
5. What is the ~~equation of B.~~ Bop's budget constraint if maximum attainable x = 50 and I = $250?

$\Rightarrow \frac{250}{P_x} = 50 \Rightarrow P_x = 5$

$\Rightarrow Y = \frac{250}{P_Y} - \frac{5}{P_Y} X$

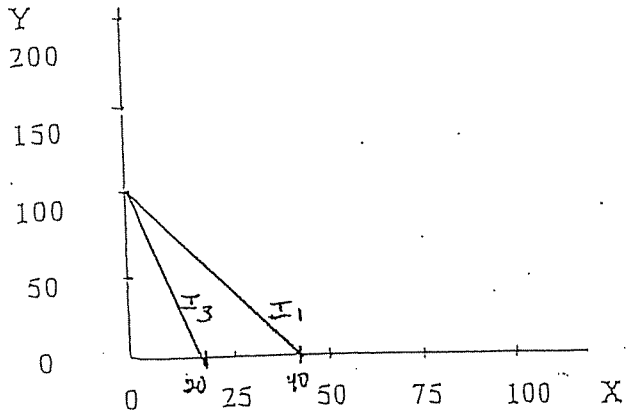
$I_1 \Rightarrow Y = 100 - 2.5X$

Figure A



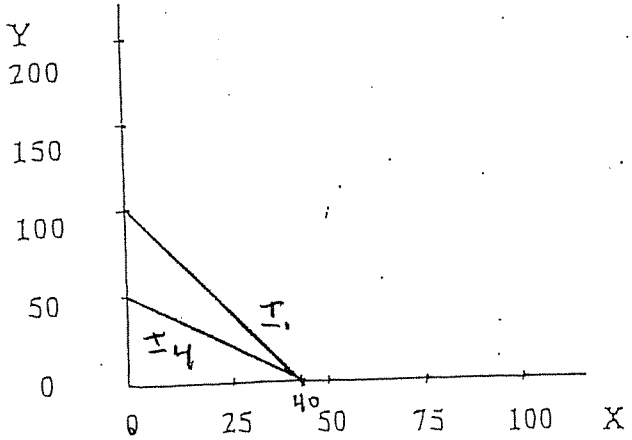
$I_2 \Rightarrow Y = 200 - 2.5X$

Figure B



$I_3 \Rightarrow Y = 100 - 5X$

Figure C



$I_4 \Rightarrow Y = 50 - 1.25X$