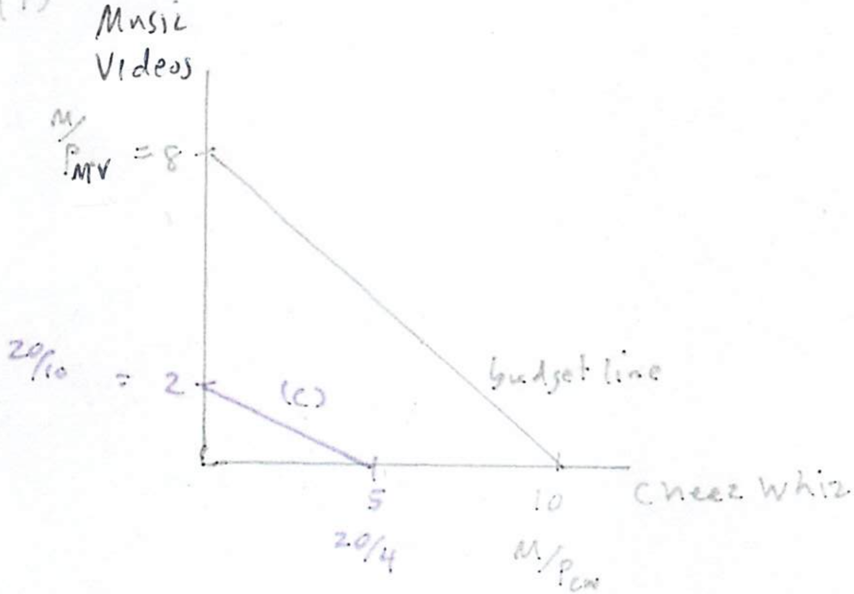
PS 6 – Consumer Theory
Solutions

(1)



$M = \$40$

$P_{CD} = \$5$

$P_{cw} = \$4$

(a) slope = rise/run =

$$\frac{\frac{M}{P_{MV}}}{\frac{M}{P_{cw}}} = \frac{\cancel{M}}{P_{MV}} \cdot \frac{P_{cw}}{\cancel{M}} = \frac{P_{cw}}{P_{MV}}$$

(b) $P_{MV} \cdot MV + P_{cw} \cdot cw = M$

$$\frac{P_{MV} \cdot MV}{P_{MV}} = \frac{M}{P_{MV}} - \frac{(P_{cw} \cdot cw)}{P_{MV}}$$

$$MV = \underbrace{\frac{M}{P_{MV}}}_{\text{y-intercept}} - \underbrace{\frac{P_{cw}}{P_{MV}}}_{\text{slope}} \cdot cw$$

Substituting some numbers... Suppose $cw = 5$. Then

$MV = 8 - 0.8(5)$

$MV = 8 - 4 = 4$

So if they buy 5 cw, they'll buy 4 MV.

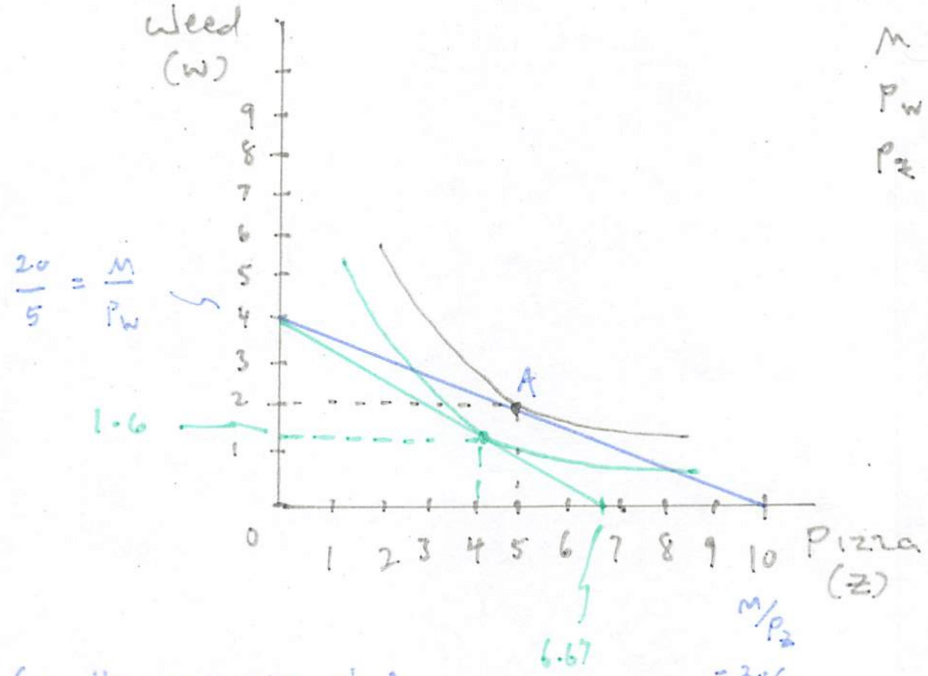
Check it: $\underset{(5)}{P_{MV}} \cdot \underset{(4)}{MV} + \underset{(4)}{P_{cw}} \cdot \underset{(5)}{cw} = \underset{40}{M}$

yep, it works.

(c) Meatwad's M falls to \$20, and $P_{MV} = \$10$ now.
The new budget line is shown in purple, labeled (c).

(2)

$M = \$20$
$P_W = \$5$
$P_Z = \$2$



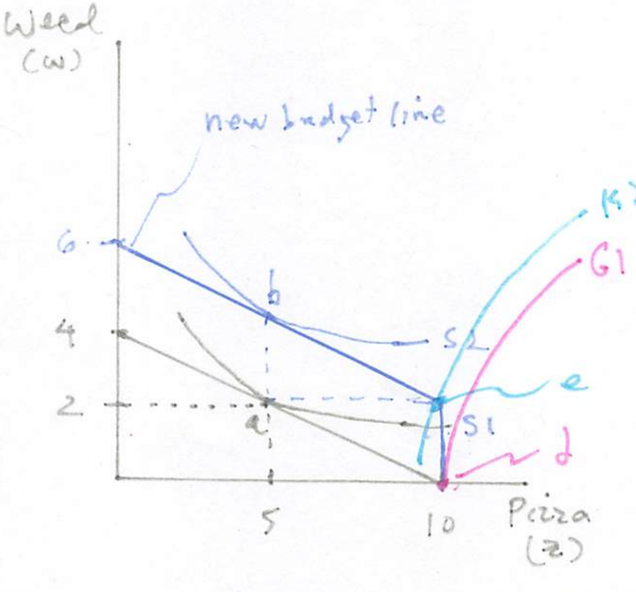
(a). He consumes at A, W(2) and Z(5).

(b) P_Z increases to \$3. The new intercept is $\frac{M}{P_Z'} = \frac{20}{3} = 6.67$

The budget line rotates in. I've drawn the new IC so that now he consumes. 4Z. $4 \cdot \$3 = 12$, so he spends $20 - 12 = 8$ on weed. $8/5 = 1.6$ W.

(2) c.

Fig. 2c



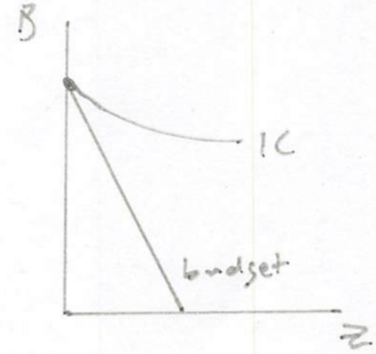
This example shows how we'd handle it if the change occurs to the y-axis good (rather than the usual x-axis).

Also note that (b) is directly above (a), meaning he consumes 2 more units of weed at b than a. This is an unlikely solution. It's more likely he'd consume more w <u>and</u> z.

d. Gina dislikes (w). Her original Ic is shown in pink. She consumes at (d), 10z and 0w.
Next, govt forces her to smoke, which puts her on a lower Ic, K2, in blue, and consumption at (e).

Obviously, Gina is better off at G1, d. That's a higher Ic than K2 (and e), since she dislikes weed.

(3). A corner solution is when the optimal consumption (where the highest possible IC is tangent to the budget line) occurs on either the x- or y-axis. Yes, there can be a corner solution even when the consumer likes both goods, as shown below.



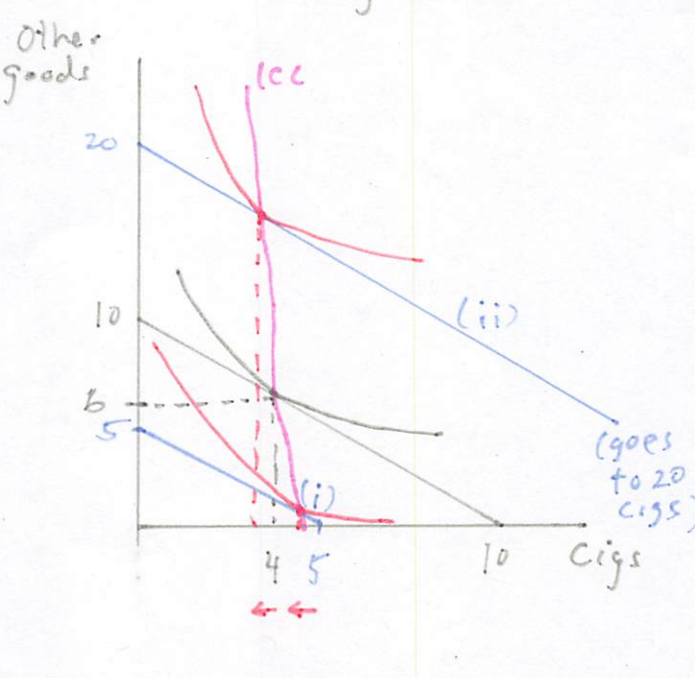
(4). a. The budget line intercept on the Cigs axis is 10, so using his entire budget ($M = \$10$) he can purchase 10,

so $10 = \dfrac{M}{P_{cigs}} = \dfrac{10}{1}$. $P_{cigs} = \$1$

b. yes, he likes cigarettes, since his I.C. is "regular" shaped

c, d, e: shown in pink
shown in blue.
shown in red.

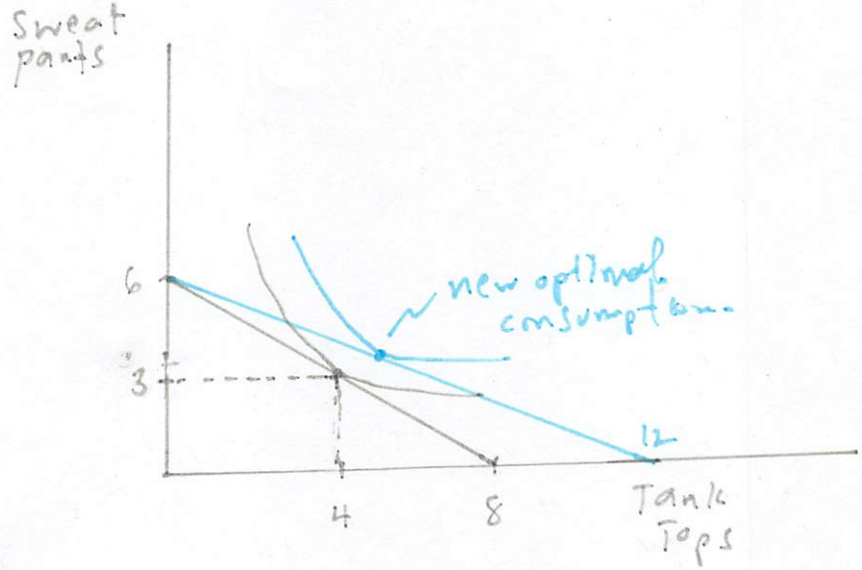
Fig. 4



(5). a. $P_T = \$3$, and we can see in Fig. 5 that he can buy 8 tank-tops if he spends his entire budget (M) on them. So, $3 \cdot 8 = 24 = M$. ($M = \$24$

He can buy a max. of 6 sweat pants if he spends his entire budget on those, so $24/6 = 4$. ($P_s = \$4$)

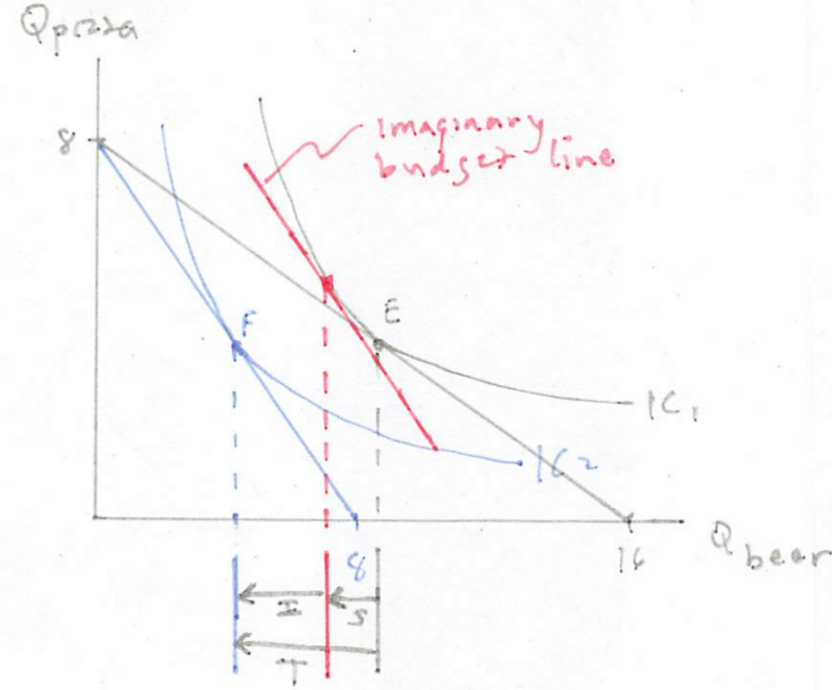
(b.



when $P_s \uparrow$ to 6, the intercept falls to 4.
Then M increases 50%, so S intercept moves to 6 (again)
and tank top intercept moves to 12.

(c). Carl is better-off after the changes in part (b), since he's now on a higher IC.

(6).



(a). When P_B doubles, the intercept moves to 8 (from 16)

(b). The effects are shown with arrows.

(c). The substitution effect occurs when relative p change. Here, beer got more expensive relative to pizza, so you'd buy more pizza, less beer.
Also, when the P_{beer} goes up, you have less purchasing power. When your "real income" falls, you buy less beer. (Here it's a normal good.). This is the income effect.

(d). The sub. effect al<u>ways</u> moves consumption in the opposite direction of the p change. (Here, $P_{beer} \uparrow$, so the sub effect pushes consumption of beer $\downarrow$.)

The income effect can push consumption either way. When it's a normal good, I moves the same direction as S. But if it's an inferior good, Then I moves opposite S.
(or Giffen)