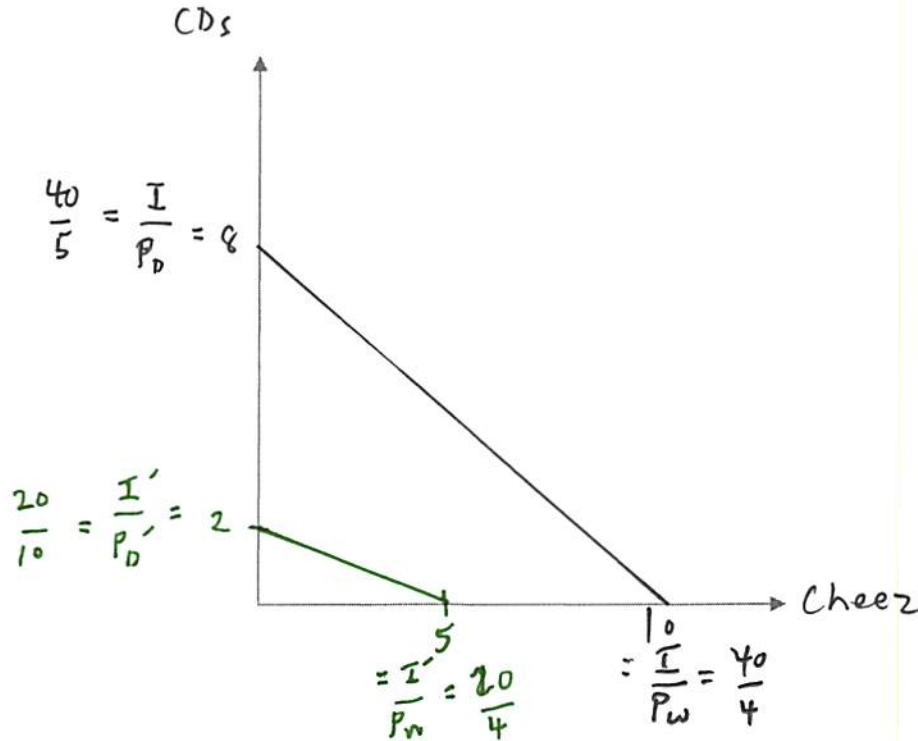


1. Draw a figure showing a budget line for Meatwad, who spends his entire income ($I = \$40$) on PeePantz CDs (y-axis, $P_D = \$5$) and Cheez Whiz (x-axis, $P_W = \$4$).



a. What is the slope of Meatwad's budget line? Show your work.

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{I/P_D}{I/P_W} = \frac{I}{P_D} \cdot \frac{P_W}{I} = -\frac{P_W}{P_D} \quad (\text{but we just drop - sign since slope is always neg.})$$

b. What is the equation that describes Meatwad's budget line? Starting from $P_D \cdot D + P_W \cdot W = I$, solve for the vertical intercept, D . Then substitute numbers in for the variables in the equation.

$$P_D \cdot D + P_W \cdot W = I, \text{ solve for } D$$

$$\frac{P_D \cdot D}{P_D} = \frac{I}{P_D} - \frac{P_W \cdot W}{P_D} \rightarrow D = \frac{I}{P_D} - \frac{P_W}{P_D} \cdot W$$

sub numbers

$$D = \frac{40}{5} - \frac{4}{5} (10)$$

$$0 = 0 = 8 - 8 \text{ when } W \text{ is } 10.$$

intercept

slope

c. Show what happens to Meatwad's budget line if Master Shake steals \$20 from Meatwad AND the price of CDs increases to \$10 at the same time.

$$I = 20 \text{ now, } P_D = \$10$$

$$P_W = \$4$$

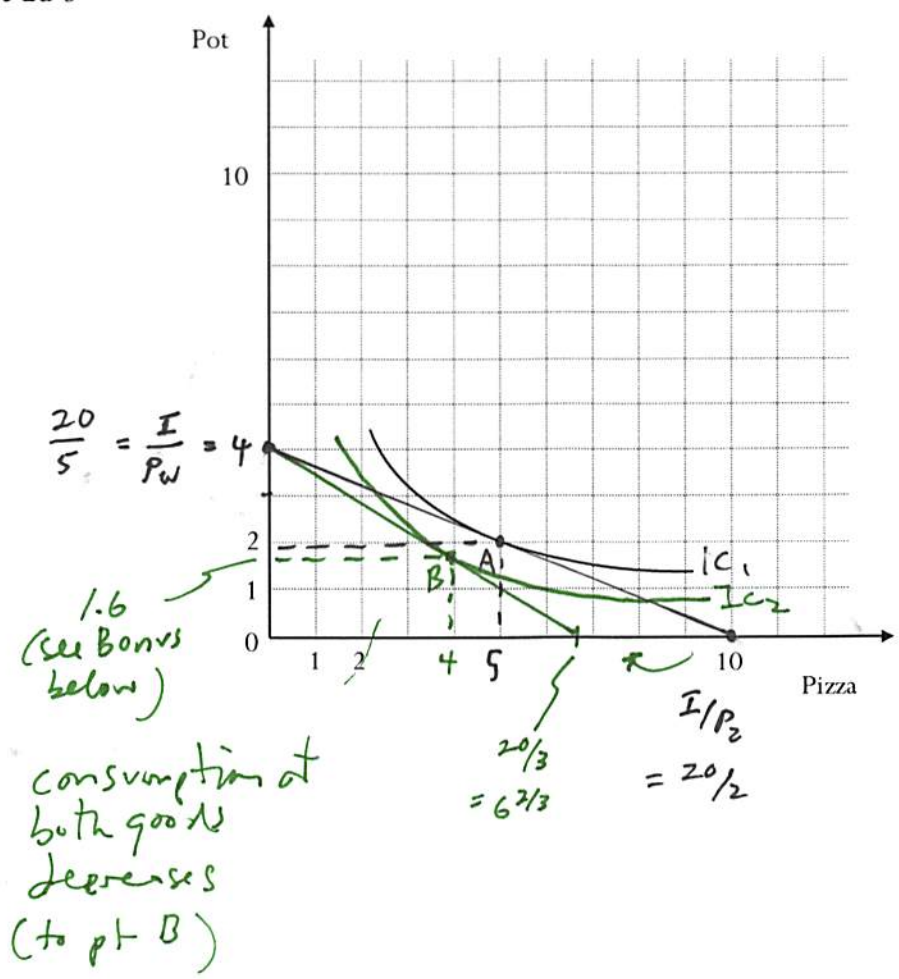
2. Despite Mr. Hand's attempts to change his student's behavior, Jeff Spicoli spends his entire daily allowance ($I = \$20$) on weed and pizza. The price of weed P_w is \$5 per bag and the price of pizza P_z is \$2 per slice. Spicoli's relative preferences for the goods are indicated by the IC in Figure 2a-b.

a. Draw the budget line on the figure. Then indicate Spicoli's optimal bundle of goods (label the point "A").

P_z should be

b. Next show what happens if P_z rises to \$3. (Be sure that you clearly indicate what happens to the budget line, his IC, and the quantities of the goods consumed by Spicoli.)

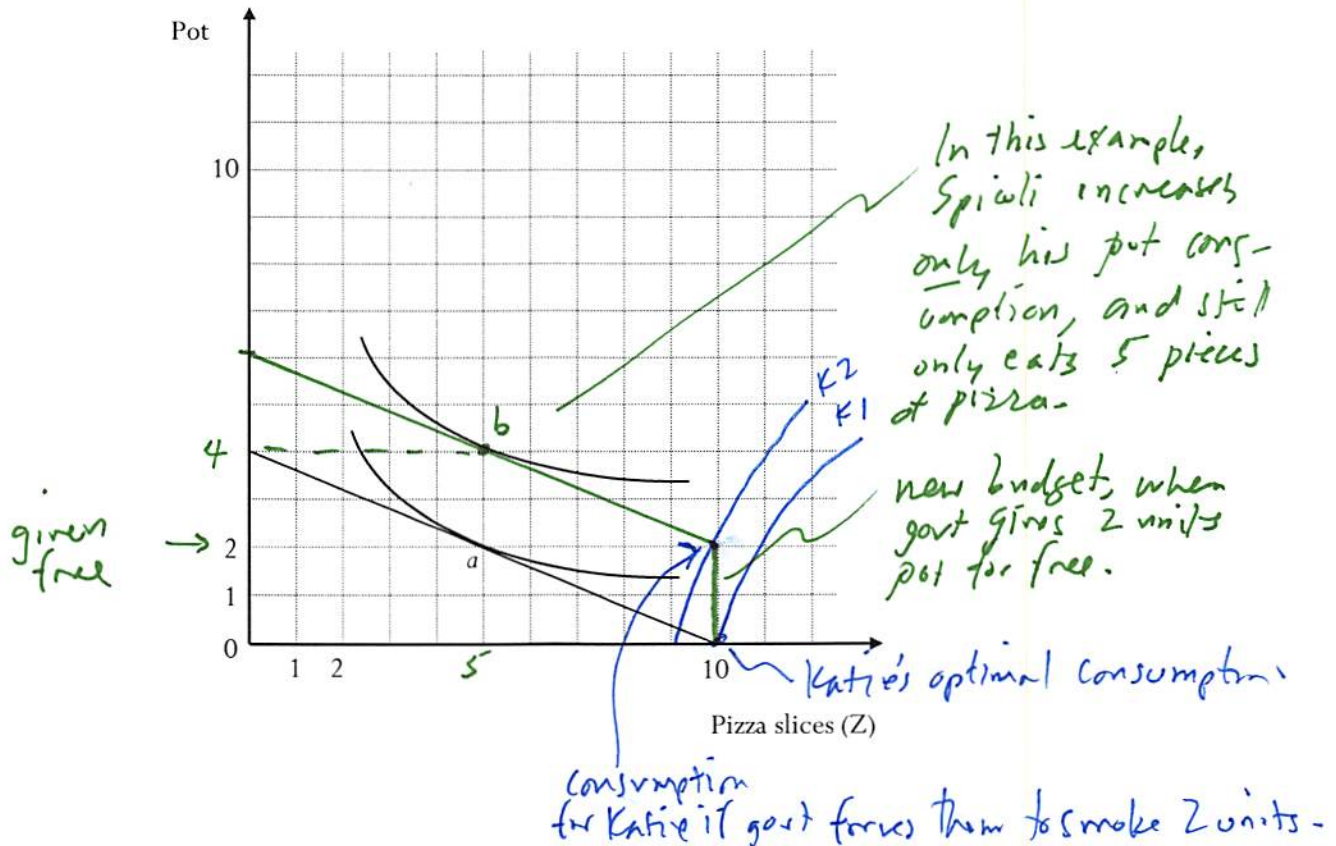
Figure 2a-b



b Bonus: If $z = 4$ after the price increase, then what is w after?
 $4 \cdot 3 = \$12$ spent on pizza,
 so \$8 spent on pot
 $8/5 = 1.6$ units pot

c. Initially Spicoli is consuming at the optimal point *a* in Figure 2c. Now suppose the government gives all high school students 2 units of pot, just to help them chill out. How would this affect Spicoli's budget line and his consumption choices? Draw the new budget line and label his new optimal consumption bundle as point *b* in Figure 2c. Briefly explain the changes shown in the graph.

Figure 2c



d. Katie's preferences are that she strongly dislikes pot, but likes pizza. Draw her indifference curve on Figure 2c, showing her optimal consumption point under the situation described in part c. Label this indifference curve *K1*. Finally, draw another indifference curve for Katie if government not only gives students 2 units of pot, but it actually forces them to smoke it too. Label this indifference curve *K2*. Under which situation is Katie better-off? Why? (see blue ink on graph)

She's better off not smoking at all, on *K1*, eating 10 pizza slices. When govt forces her to smoke (*K2*), she's on a lower IC.

3. What is a corner solution? Explain briefly. Can there be a corner solution if the consumer likes both goods?

when the optimal consumption point is on one of the axes. Normally if one good is a 'bad'! Yes, it can still happen even if both goods are liked.

4. Figure 4 shows Bubba's budget and preferences for low-carb cigarettes and a composite (other goods). Bubba's income is $I = \$10$.

a. What is the price of cigarettes? Show your calculation. c -intercept is 10, $I = 10$, so price of cigs is \$1

b. Does Bubba like cigarettes? How do you know? Yes, shape of IC - it's negative sloped.

c. Draw new budget lines (and label them) to represent the cases when (i) Bubba's income is cut in half and (ii) when his income is doubled from the original budget of \$10. (You need to draw two additional budget lines, for three total.)

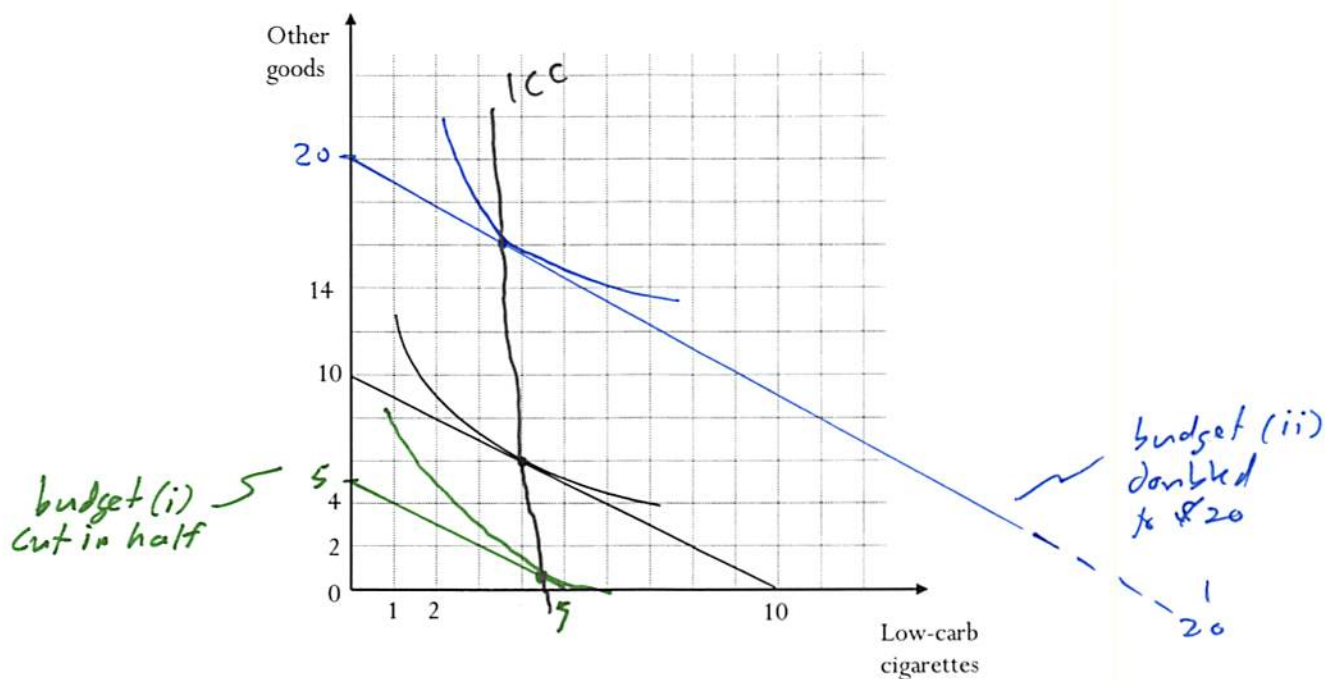
d. Draw two additional indifference curves and show the optimal consumption bundles for the budget lines drawn for part c, assuming cigarettes are inferior goods for Bubba.

ICs drawn so that, as inc. incr., consumption of cigs falls

e. Finally, draw the income-consumption curve (ICC) for Bubba.

The ICC has a negative slope

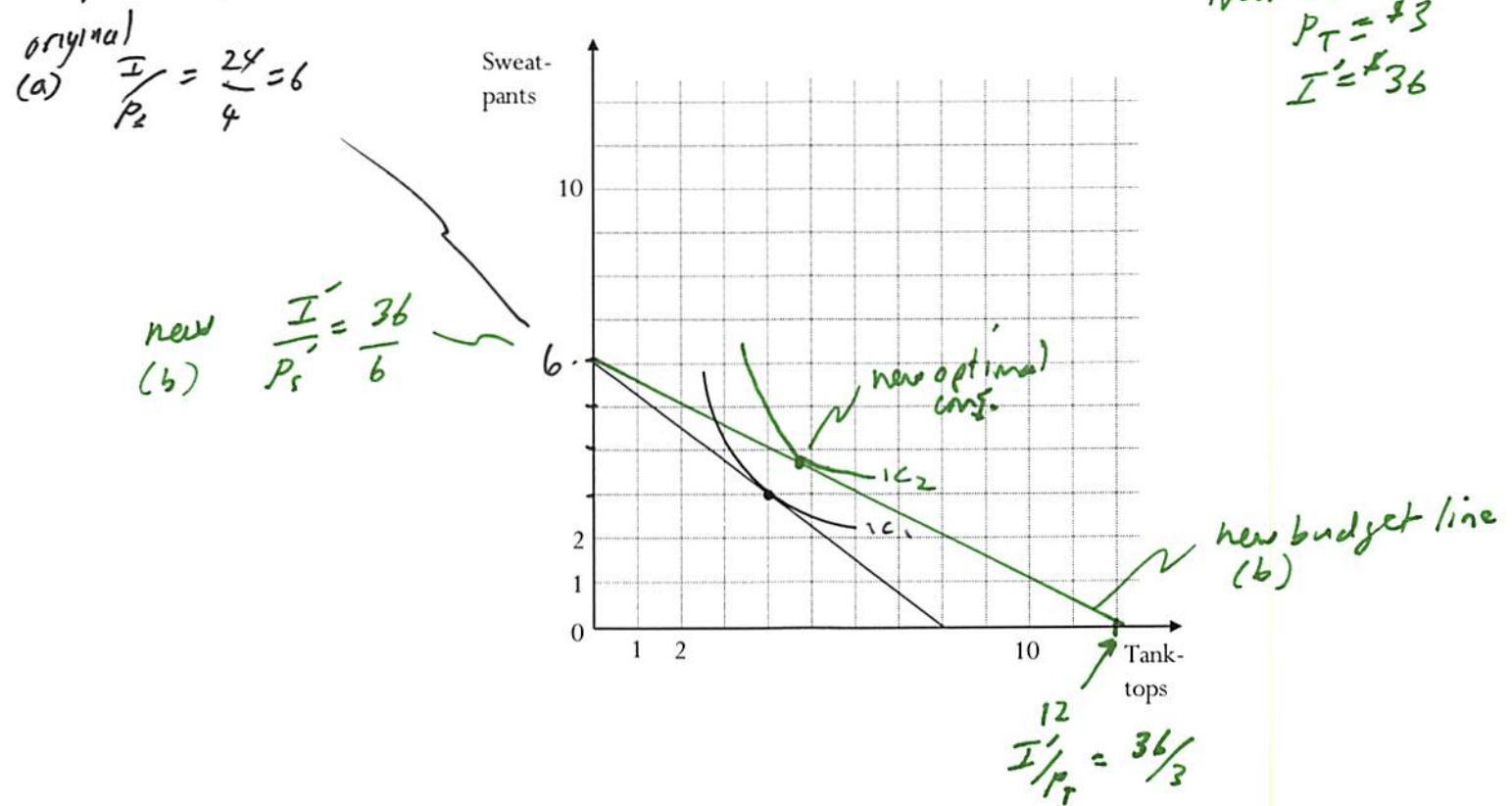
Figure 4



5. Carl lives near the southern Jersey shore, where he enjoys wearing sweatpants and tank-tops. His annual consumption behavior is illustrated in Figure 5.

- a. The price of tank-tops P_T is \$3. Find the price of sweatpants (P_S) and Carl's annual income (I). Show your work. *If he spends all his income (I) on tops, he can buy 8, so $8 \cdot 3 = 24 = I$. Then he can buy at most 6 pants with \$24, so $24/6 = \$4 = \text{price of pants } (P_S)$* $P_S = \$4$ $P_T = \$3$
- b. Draw the new budget line if P_S rises to \$6 and Carl's income (I) rises by 50% at the same time. Draw a new IC and illustrate Carl's new optimal consumption bundle.

Figure 5



c. Is Carl better off after the changes in part b, or was he happier in the initial situation? How do you know?

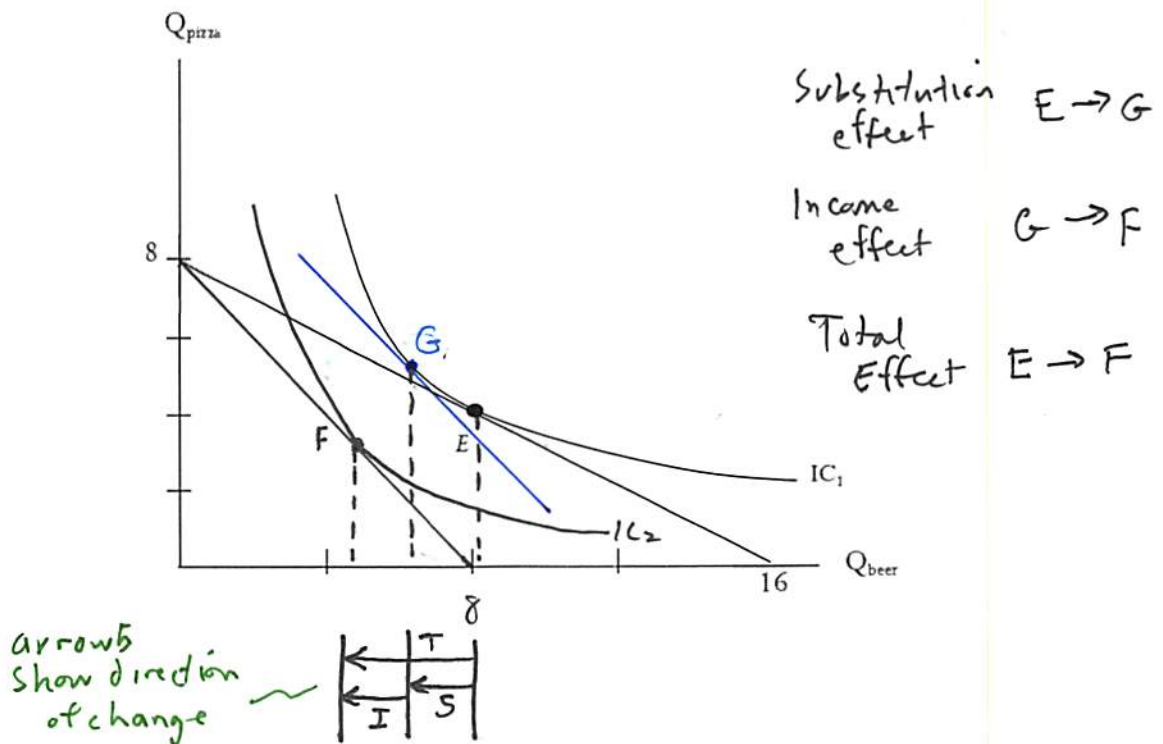
He's better off, since he's on a higher IC after the changes (green budget, IC)

6. Carl's budget and indifference curve are illustrated below in Figure 6. His optimal consumption is labeled E .

a. Suppose the price of beer doubles. Draw the budget line that reflects the new price of beer. Then draw a new IC to show his optimal consumption bundle after the price change. Label the new optimal point F .

b. Decompose the total effect of the price change into the substitution and income effects.

Figure 6



c. Explain the "substitution effect" and "income effect" as if you were explaining it to a friend who has never taken an economics class.

The substitution effect is a relative price effect: when P_{beer} incr., it's now relatively more expensive than beer, so you switch to the other good. The income effect is a 'real income' effect, so that when P_{beer} increases, purchasing power falls, and cons. of normal goods will fall.

d. What does it mean that "the substitution effect is always negative, but the income effect can be positive or negative"?

Sub-effect always pushes consumption in the opposite direction as the price change. Above, P_{beer} rises, and cons. falls. Income can push cons. \uparrow or \downarrow , depending on if it's a normal or inferior good.