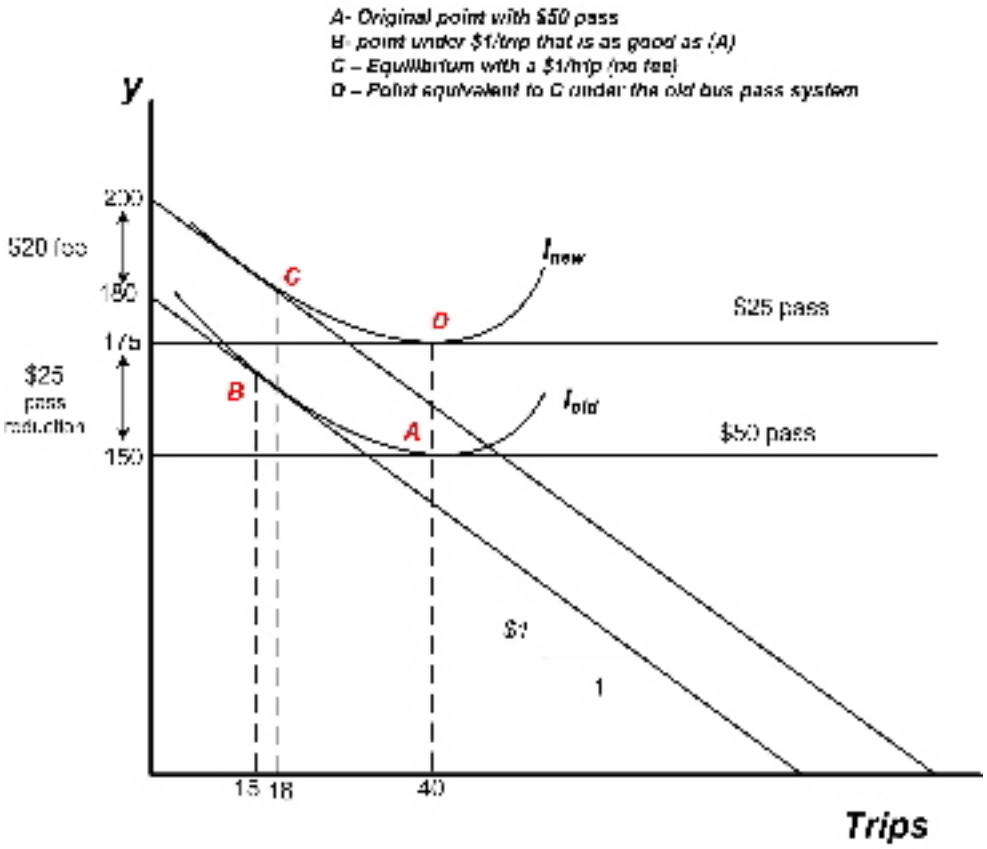

Figure 1: Graph for Question 3

ECON 6500
Assignment 2: Partial Answer Key

3 Myrtle has $200 per month to spend on Transit (X) and all other goods (Y). She currently buys a bus pass for $50 and rides 40 times per month.If she didn't buy the pass, bus rides would cost $2/ride. Myrtle is offered to join a Transit program that would allow her to pay a membership fee and then could ride the bus for $1 per trip. The most Myrtle would pay for the membership is $20. and then she would ride 15 times a month. If she were given the membership for free, she would ride the bus 18 times per month. Myrtle also reveals that she would be indifferent between a free membership (and $1 per ride) versus simply having the traditional bus pass reduced to $25 per month (flat rate), where she would again choose to ride the bus 40 times a month.

(a) Using all the information provided, draw all the relevant budget constraints and indifference curves. Be sure to label all equilibrium points and have a legend that explains each point (in one or two sentences).

(b) Calculate her CV (compensating variation) Two answers acceptable $20 fee; or $30 difference between the Pass ($50), and the most she would pay for $1 rides ($20)

(c) Calculate her EV (equivalent variation)-25$

4 Skippy has the following utility function: $u = xy$ and faces the budget constraint: $M = p_x x + p_y y$. Her associated marginal rate of substitution is $MRS = \dfrac{y}{x}$

(a) Use the $MRS = p_x/p_y$ and the budget constraint to find Skippy's demand functions.

$$x = \frac{M}{2p_x}, y = \frac{M}{2p_y}$$

indirect utility function is

$$v = \left(\frac{M}{2p_x}\right)\left(\frac{M}{2p_y}\right) = \frac{M^2}{4p_xp_y}$$

v tells you the utility number for any given budget and prices

(b) Suppose $M = 120$, $P_y = 1$ and $P_x = 4$. What is Skippy's optimal x, y and utility number? If the price of x was lowered to 2 what would be her x, y and utility number

$$\begin{aligned} x_{old} &= 15, y_{old} = 60, u_{old} = 900 \\ x_{new} &= 30, y_{new} = 60, u_{old} = 1800 \end{aligned}$$

(c) What is the most Skippy would pay to have P_x lowered to 2? **USE INDIRECT UTILITY**

$$\begin{aligned} v &= \frac{M^2}{4p_xp_y} \\ 900 &= \frac{(M-F)^2}{4(2)(1)} \\ 7200 &= (120-F)^2 \\ 120-F &= \sqrt{7200} = 84.9 \\ F &= 120 - 84.9 = 35.1 \end{aligned}$$

(d) Suppose $M = 120$, $P_y = 1$ and $P_x = 4$. How much additional income would Skippy need to be as well off as if the price of x had fallen to 2? **USE INDIRECT UTILITY**

$$\begin{aligned} v &= \frac{M^2}{4p_xp_y} = 1800 \\ 1800 &= \frac{(M+S)^2}{4(4)(1)} \\ 28800 &= (120+S)^2 \\ 120+S &= \sqrt{28800} = 169.7 \\ S &= 169.7 - 120 = 49.7 \end{aligned}$$