

$P_Y \downarrow$

2. (2 points) Suppose now that price of good Y decreases, everything else constant. Accordingly, the budget line changes to BL_1 . Based on the given information, what is the new price of good Y?

$$\text{New } Y_{\max} = 45, \quad P'_Y = \frac{180}{45} = 4$$

3. (2 points) Given the reduction in the price of good Y, consumer's optimal choice changes from E_0 to E_1 . State the utility-maximizing condition at point E_1 .

$$\text{At } E_1, \quad -\frac{P_X}{P'_Y} = -\frac{MU_X}{MU_Y} \quad ; \text{ ie. } MRS = -\frac{MU_X}{MU_Y} = \frac{-4}{4} = -1$$

4. (12 points) Use Hicksian approach to illustrate the substitution effect and income effect of this price change on the optimal consumption of both good X and good Y. Also, indicate the direction of each effect.

Effects on good X:

Substitution effect =

Income effect =

$$SE \text{ on } X = X' - 25 < 0$$

$$IE \text{ on } X = 22.5 - X' > 0$$

Effects on good Y:

Substitution effect =

Income effect =

$$S.E. \text{ on } Y = Y' - 13 > 0$$

$$I.E. \text{ on } Y = 22.5 - Y' > 0$$

5. (2 points) Is good X a normal good or an inferior good?

Normal good.