1. Answer the following questions.

1.1. Suppose Govt Multiplier is 5 and ΔG = 5. Find ΔY.

- Government multiplier = $\frac{\Delta Y}{\Delta G} = 5$
- $\Delta G = 5$

$\therefore \Delta Y$; $\frac{\Delta Y}{5} = 5$

$\Delta Y = 25$ ※

1.2. Suppose Tax Multiplier is -3 and ΔY = -9. Find ΔT.

find ΔT ; Tax multiplier = -3

$\Delta Y = -9$

$\therefore$ Tax multiplier : $\frac{\Delta Y}{\Delta T} = -3$

$\frac{(-9)}{\Delta T} = -3$

$\Delta T = 3$

1.3. Suppose ΔY = 10 and ΔI = 2. Find Investment Multiplier.

- $\Delta Y = 10$
- $\Delta I = 2$

$\therefore$ Investment = $\frac{10}{2} = 5$

$\frac{\Delta Y}{\Delta I}$

SKIP

2. From Y = C + I + G where C = $C_0 + C_1(Y - T)$, find

2.1. Equilibrium Output Y*

$Y = C_0 + C_1 Y - C_1 T + I + G$

$Y - C_1 Y = C_0 + C_1 T + I + G$

$Y(1 - C_1) = C_0 + C_1 T + I + G$

$Y = \frac{1}{1 - C_1}(C_0 + C_1 T + I + G)$

2.2. ΔY/ΔI

as I is injection; $\frac{\Delta Y}{\Delta I} = \frac{1}{1 - \text{slope AE}}$

2.3. ΔY/ΔG

as G is injection ; $\frac{\Delta Y}{\Delta G} = \frac{1}{1 - \text{slope AE}}$

2.4. ΔY/ΔT

as T is leakage; $\frac{\Delta Y}{\Delta T} = \frac{-MPC}{1 - \text{slope AE}}$

2.5. Balanced-Budget Multiplier (BBM)

$\frac{\Delta Y^*}{\Delta G} + \frac{\Delta Y^*}{\Delta T_0} = \frac{1 - C_1}{1 - C_1}$

2.6. Explain what the BBM is.

BBM is a change in aggregate output when both G and T increase by 1 unit.

3. Assume a closed economy with government. The country has the following components of aggregate expenditure.

C = 300 + 0.75(Yd)	I = 50
G = 50	T = 50 (lump-sum tax)

3.1. Use the Y = AE (standard) approach to find the equilibrium output.

└ equilibrium condition

$AE = C + I + G$

$\rightarrow Y = C + I + G$

$Y = C_0 + C_1(Y - T) + I + G$

$Y = 300 + 0.75(Y - 50) + 50 + 50$

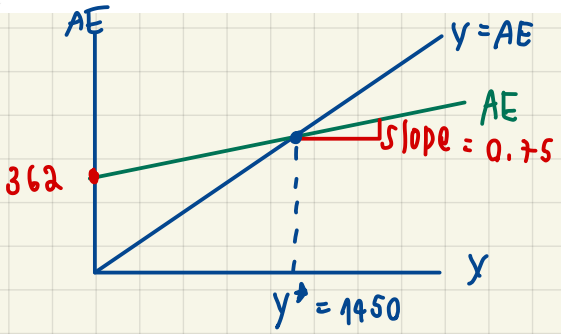
$Y = 300 + 0.75Y - 37.5 + 50 + 50$

$Y - 0.75Y = 362.5$

$0.25Y = 362.5$

$Y^* = 1450$

3.2. Draw the Keynesian Cross, and find the intercept on the vertical axis and the slope of the AE schedule.



3.3. Use the Leakage = Injection (or saving/investment) approach to find the equilibrium level of output.

(Hint: the equilibrium condition is S + T = I + G, with Yd= Y – T = C + S)

$S + T = I + G$ —① [leakage = injection]

$Y - T = C + S$ —② [saving function]

$Y - C = S + T$

$Y - C = I + G$

$Y - C = 50 + 50$

$Y - C = 100$

$Y - (300 - 0.75Yd) = 100$

$Y - (300 - 0.75(Y - 50) = 100$

$Y - 300 - 0.75Y - 37.5 = 100$

$0.25Y = 362.5$

$Y^* = 1450$ #

3.4. Draw the saving/investment curve to show the equilibrium.

saving function : $Y_d = C+S$

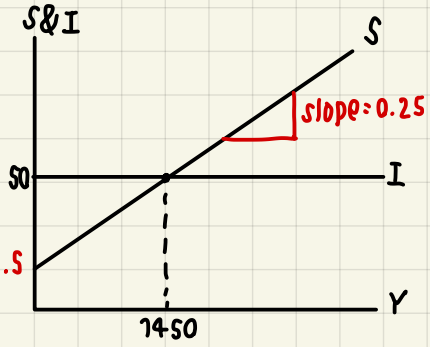
$Y - T = C+S$

$Y - 50 = 300 + 0.75(Y-50) + S$

$S = -300 - 0.75Y + 37.5 + Y - 50$

$S = -312.5 + 0.25Y$ #

intercept slope



3.5. Suppose that the government decides to build more roads, raising government spending by 50 units, but this project is to be financed by the increase in net taxes of 50 units. Use the Y = AE (standard) approach to find the new equilibrium output.

$G\uparrow = 50 + 50 = 100$

$T\uparrow = 50 + 50 = 100$

new $Y^* = ?$

$Y = AE$ - equilibrium

$AE = C+I+G$

$Y = 300 + 0.75(Y-100) + 50 + 100$

$= 300 + 0.75Y - 75 + 150$

$Y = 375 + 0.75Y$

$0.25Y = 375$

$Y^* = 1500$

3.6. Use the Balanced-Budget Multiplier (BBM) derived from Question 2.5 to find the new equilibrium output.

: BBM = $\frac{\Delta Y^*}{\Delta G_0} + \frac{\Delta Y^*}{\Delta T_0} = \frac{1-c_1}{1-c_1} = 1$ when you sum $\frac{\Delta Y}{\Delta G}$ with $\frac{\Delta Y}{\Delta T}$, you will know how Y change

: if the govt spending and lum-sum tax increase by 1, income will increase 1

∴ Therefore, in order to build more road, Govt increase their spending by 50, and lum-Sump tax increase by 50. So the equilibrium will increase 50

∴ old $Y^* + 50$

$= 1,450 + 50$

$= 1,500$ #

Question 4 skip!

5. Assume an open economy with government. The country has the following components of aggregate expenditure.

C = 200 + 0.7(Yd)	I = 75	G = 75
T = 50	X = 50	M = 50 + 0.1Y

5.1. Use the Y = AE approach to find the equilibrium. Is Y = 300 an equilibrium? If it is not, explain the adjustment process towards equilibrium.

$Y = AE$

$Y = C + I + G + (X - M)$

$Y = 200 + 0.7(Y - 50) + 75 + 75 + 50 - 50 - 0.1Y$

$Y = 200 + 0.7Y - 35 + 75 + 75 - 0.1Y$

$Y = 315 + 0.6Y$

$0.4Y = 315$

$Y^* = 787.5$

∴ Y = 300 is not equilibrium, which means that we have a shortage output. so, we need to increase output to ge the equilibrium

5.2. Based on what you have derived in Question 4, calculate the investment, government spending, tax, and balanced-budget multipliers.

$C = 200 + 0.7(Yd)$ (MPC)

$M = 50 + 0.1Y$ (MPM)

① Investment multipliers $= \frac{\Delta Y^*}{\Delta I} = \frac{1}{1 - MPC + MPM} = \frac{1}{1 - 0.7 + 0.1} = \frac{1}{0.4} = 2.5$ #

② govt spending Multipliers $= \frac{\Delta Y^*}{\Delta G} = \frac{1}{1 - MPC + MPM} = \frac{1}{1 - 0.7 + 0.1} = \frac{1}{0.4} = 2.5$ #

③ tax multipliers $= \frac{\Delta Y^*}{\Delta T} = \frac{-MPC}{1 - MPC + MPM} = \frac{-0.7}{1 - 0.7 + 0.1} = \frac{-0.7}{0.4} = -1.75$ #

④ BBM $= \frac{\Delta Y^*}{\Delta G} + \frac{\Delta Y^*}{\Delta T} = 2.5 + (-1.75) = 0.75$ #

5.3. Interpret the value of each of the multipliers.

① $\frac{\Delta Y^*}{\Delta I}$; when investment increase by 1 unit, output will increase by 2.5 units.

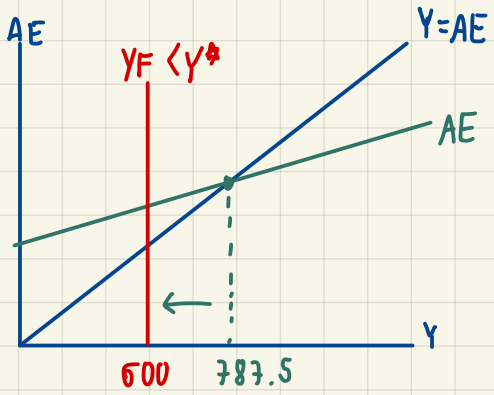
② $\frac{\Delta Y^*}{\Delta G}$; when govt spending increase by 1 unit, output will increase by 2.5 units.

③ $\frac{\Delta Y^*}{\Delta T}$; when tax increase by 1 unit, output will decrease by 1.75 units.

④ BBM; when government spending and tax increase by 1 units, output will increase by 0.75 unit.

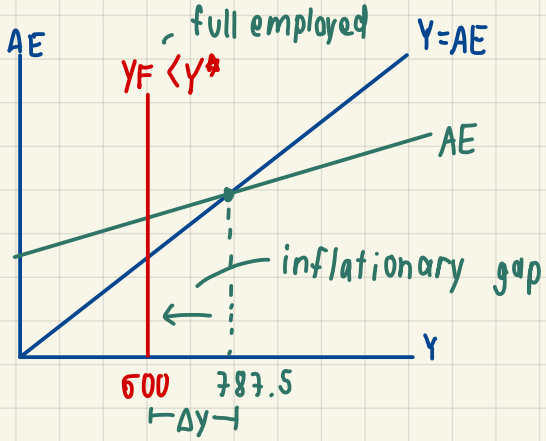
Suppose that the full-employment output (Y_F) is 600;

5.4. What type of output gap is the economy currently experiencing?



Unemployment rate is bellow the natural rate of unemployment, which mean we are in inflationary gap. In this time, the economy is growing too fast and over employed.
So that, the policy solution is to raise tax and cut government spending to be Y = YF
over capacity
(787.5 ผลิตได้มากกว่า → U<UN)
demand มากไป → large aggregate expenditure

5.5. Draw the Keynesian Cross. Identify its slope and intercept. Also, illustrate the output gap.



Now, government wants to correct the output gap by moving the economy to the full-employment level, and is considering different policies.

(Hint: use the multipliers from Question 5.2 to answer the following questions)

5.6. If the government wants to adjust **only its spending (G)**, how much G should be changed? 2.5

5.7. If the government wants to adjust **only its net taxes (T)**, how much T should be changed? -1.75

5.8. If the government wants to boost **only investment (I)**, how much I should be changed? 2.5

5.9. If the government wants to implement a balanced-budget policy, what should the government do with G and T? 0.75

$\Delta Y^* = -187.5$

5.6) $\frac{\Delta Y^*}{\Delta G} = 2.5$

$\frac{-187.5}{\Delta G} = 2.5$

$\Delta G = -75$

5.7) $\frac{\Delta Y^*}{\Delta T} = -1.75$

$\frac{-187.5}{\Delta T} = -1.75$

$\Delta T = 107.143$

5.8) $\frac{\Delta Y^*}{\Delta I} = 2.5$

$\frac{-187.5}{\Delta I} = 2.5$

$\Delta I = -75$

5.9) $\frac{\Delta Y^*}{\Delta G} + \frac{\Delta Y^*}{\Delta T} = 0.75$

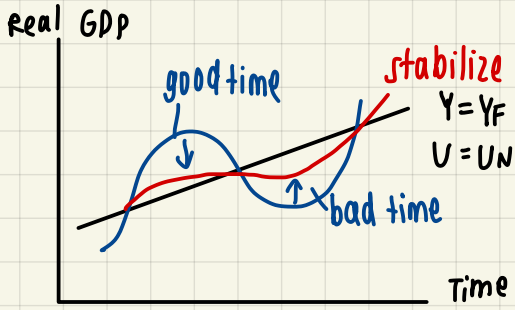
$\frac{-187.5}{0.75} = -250$

6. Explain the role of Import as an automatic stabilizer. If the government wants to further stabilize the economy, is there anything that the government can do with its tax system? Explain.

The government stabilize the economy means they try to reduce fluctuations of output in business cycle.
- when economy is bad Y is low which means people are pour. T and M are small which means people have more income to spend domestically. The govt. can make it for boosting the economy during the bad time.
- when economy is good Y is high, T and M are large which means that people have less income to spend domestically. The govt. make it to slow down the economy during the good time.

Automatic stabilizer → component in AE in to stabilize the GDP
Import / income tax are automatic stabilizer

Role of automatic stabilizer is reduce the fluctuation of economy
if it fluctuate people can't adjust their behavier quickly



during good time → High Y, AE
↳ govt raise tax (T) and import (M) to reduce ppl. income (Y) which helps to slow down the economy during peak time.

during bad time → Low Y, AE
↳ govt reduce tax (T) and import (M) to increase ppl. income (Y) which helps to boost the economic recession.

7. Let S = -200 + 0.5Y and I = 50, be the saving function and investment.

7.1. Use the saving/investment approach to find the equilibrium output.

- at equilibrium
leakage = injection
saving = investment
$-200 + 0.5Y = 50$
$0.5Y = 250$
$Y^* = 500$ *

7.2. Find the equilibrium saving. (Hint: substitute Y* into S)

Saving $= -200 + 0.5Y^*$
$= -200 + 0.5(500)$
$= -200 + 250$
$= 50$ *

Suppose people decide to save more, increasing autonomous saving by 100.

7.3. Use the saving/investment approach to find the new equilibrium output.

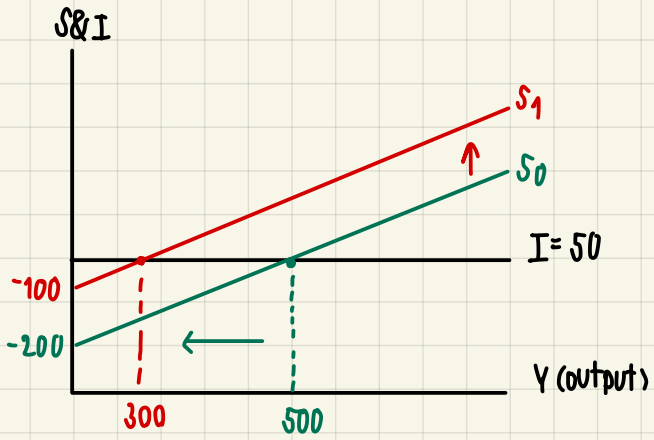
- New saving $= -200 + 0.5Y + 100$
$= -100 + 0.5Y$

Due to $S = I$
$-100 + 0.5Y = 50$
$0.5Y = 150$
$Y^* = 300$ *

7.4. Find the new equilibrium saving. (Hint: substitute new Y* into S)

Saving $= -100 + 0.5Y^*$
$= -100 + 0.5(300$
$= -100 + 150$
$= 50$ *

7.5. Comment on your result.



parodox of thrift : people save more → Economy slow down → Less income to ppl. (Y↓)

people save more by 100 ($S_0 \rightarrow S_1$)

Output decrease by 200 (500 → 300)