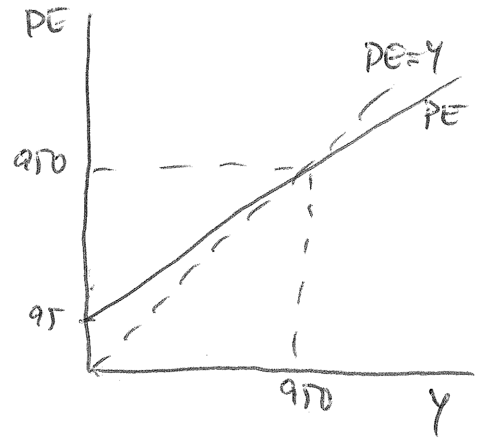
Keynesian cross exercise

i)
$$\begin{cases} PE = \overbrace{19 + 0.9(Y-T)}^{C} + \overbrace{55}^{I} + \overbrace{75}^{G} \\ Y = PE \\ Y = 950 \end{cases}$$



$950 = 19 + 0.9(950 - T) + 55 + 75$

$950 = 19 + 855 - 0.9T + 55 + 75$

$0.9T = 54 \rightarrow T = \frac{54}{0.9} = \boxed{60}$

$PE = 19 + 0.9(Y-60) + 55 + 75$
$PE = 95 + 0.9Y$

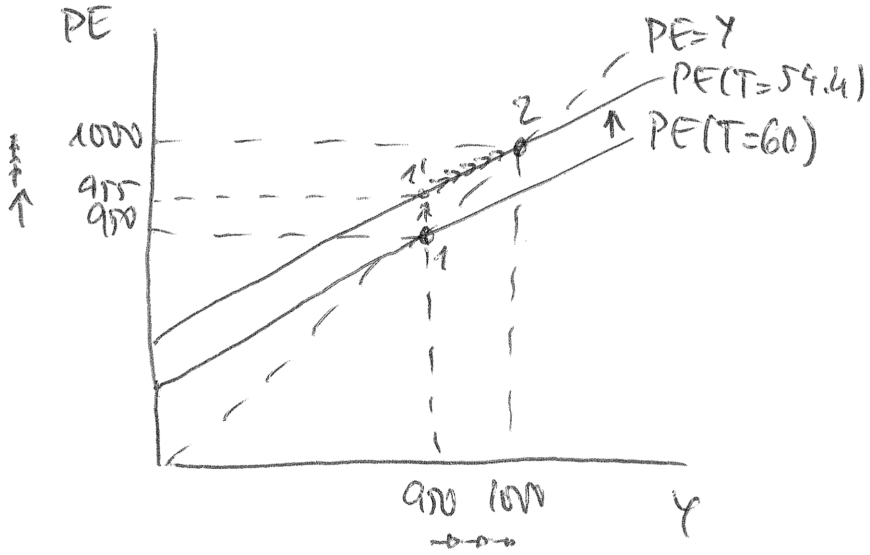
$G - T = 75 - 60 = \boxed{15}$

$C = 19 + 0.9(950 - 60) = 820$

ii)
$$\begin{cases} Y = 1000 \\ Y = PE \\ PE = 19 + 0.9(Y-T) + 55 + 75 \end{cases}$$

$1000 = 19 + 0.9(1000 - T) + 130$

$0.9T = 49 \rightarrow T = \frac{49}{0.9} = \boxed{54.44} \quad \Delta T = -5.56$



$G - T = 75 - 54.44 = 20.56$

Increase in government deficit from 15 to 20.56 (+5.56)

↓ taxes → ↑(Y−T) → ↑C → ↑PE

Initially PE = 955 > Y = 950

Excess Demand → Inventory investment = −5

Δ Stock of inventories = −5

Eventually, firms increase production → ↑Y → ↑C

multiplying effect

$C+I+G = 870+55+75$
$= 1000$ ✓

$C = 19 + 0.9(Y-T) = 19 + 0.9(1000 - 54.44) = 870$

Increase in consumption $870 - 820 = +50$

Tax multiplier → Theory: $\frac{dY}{dT} = \frac{-c_1}{1-c_1} = \frac{-0.9}{1-0.9} = -9$

→ Practice

$$\frac{dY}{dT} = \frac{1000-950}{54.44-60} = -\frac{50}{5.56} = -9$$