Problem 1.

C	Consumption	30000
I	Investment	6000
G	Government Purchases	5000
EX	Export	6000
IM	Imports	7000
TX	Taxes	8000
TR	Transfer Payments	4000

Currently the goods market is in equilibrium, the general price level is $P = 50$, and the marginal propensity to consume is $MPC = 0.75$. In this country, find

(a) real GDP

(b) real disposable income

(c) expenditure multiplier

Answer 1. Relevant formulas are

(a) $Y = C + I + G + EX - IM = 30000 + 6000 + 5000 + 6000 - 7000 = 40,000$

(b) $Y_d = Y - TX + T = 40000 - 8000 + 4000 = 36,000.$

(c) expenditure multiplier $= \frac{1}{1 - MPC} = \frac{1}{1 - 0.75} = 4$

Problem 2.

C	Consumption	30000
I	Investment	6000
G	Government Purchases	5000
EX	Export	6000
IM	Imports	7000
TX	Taxes	8000
TR	Transfer Payments	4000

The amount of government budget deficit or surplus equals _____ units.

Answer 2.

$$TX - TR - G = 8000 - 4000 - 5000 = -1000.$$

Budget deficit means the government is doling out more than it's taking in; budget surplus means government is taking in more than it's doling out. Since this is negative, it means the government is spending more than it's bringing in—a deficit.

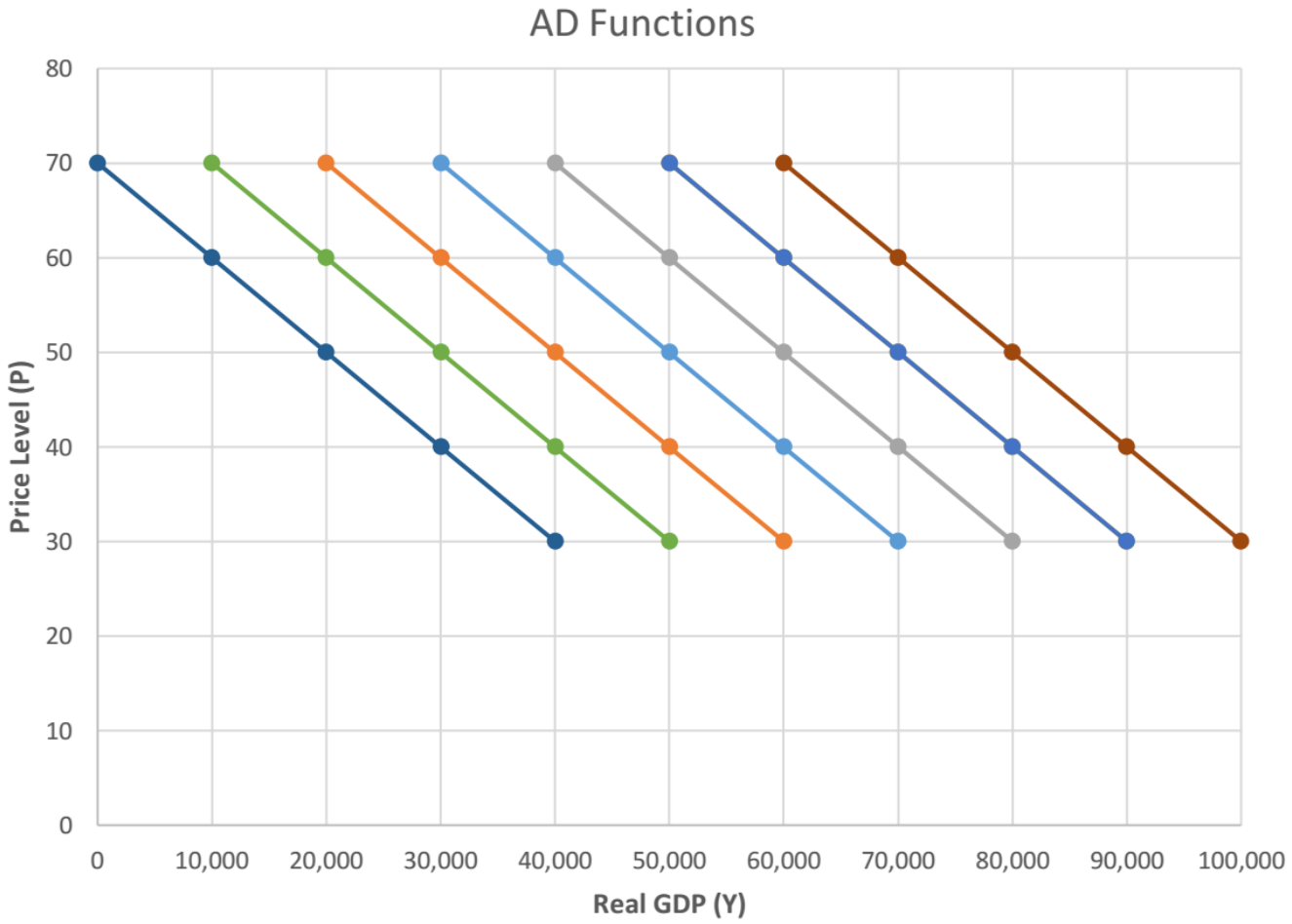
Problem 3. Same country. Suppose that the government increases its purchases (G) by 5,000 units and the price level stays at $P = 50$ units. As a result the real GDP will increase by _____ units, of which _____ units will be due to the increase in government purchases and the remaining _____ units due to the resulting increase in household consumption.

Answer 3. Real GDP will increase by

$$5000 \times \frac{1}{1 - MPC} = 5000 \times 4 = 20,000.$$

5000 of that is due directly to the increase in G; the remaining 15,000 from the expenditure multiplier is due to increases in consumption.

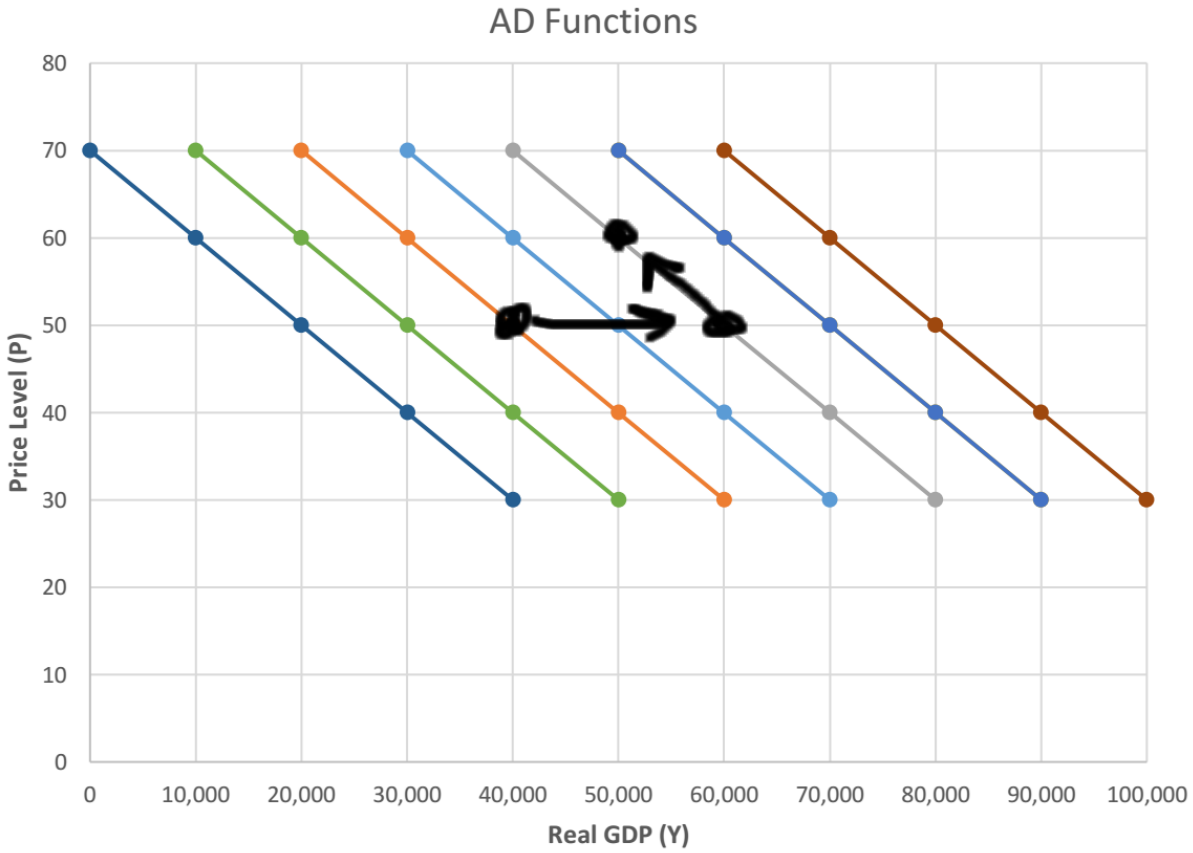
Problem 4.



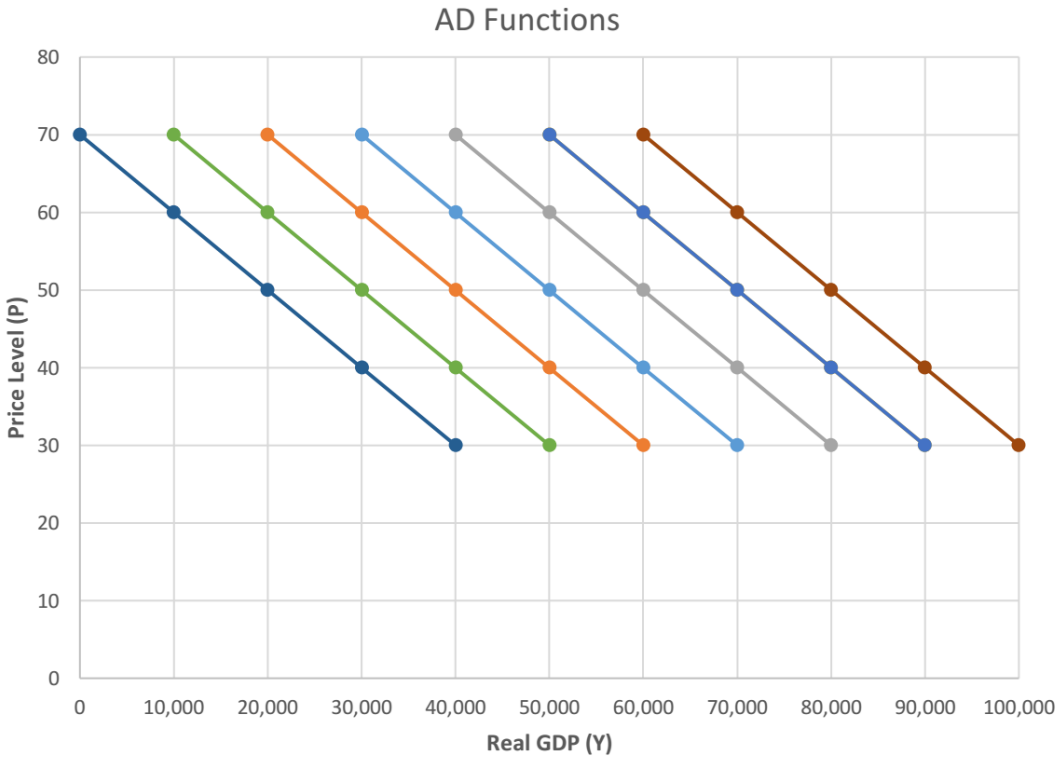
Suppose that the government increases its purchases (G) by 5,000 units and at the same time, the price level increases to $P = 60$ units. As a result the new level of real GDP will equal _____ units.

Answer 4. Original real GDP is 40,000. Since the original price level is 50, this means we are on the orange AD curve.

The MPC is 0.75, so the expenditure multiplier is 4. Therefore the change in G will cause an increase in GDP of $5000 \times 4 = 20000$, up to $60,000$. So we've moved to the gray AD curve. Now move to the new price of 60 and we have $Y = 50,000$.



Problem 5. You may find this question just a little too challenging, but you can do it. Refer to the same data. Let's call the amount of aggregate demand that excludes government purchases ($C+I+EX-IM$) private spending. In our case the private spending equals 35,000 units ($C+I+EX-IM=30,000+6,000+6,000-7,000$). Suppose that the government increases its purchases (G) by 5,000 units and at the same time the price level increases to $P=70$. As a result, the new private spending will equal _____ units.



Answer 5. I'll explain in chunks.

- We start where $Y = C + I + G + EX - EM = 40000$ and $P = 50$. This means we are on the orange AD curve initially.
- G changes from 5000 to 10000. Via the expenditure multiplier effect, this change in G causes AD to shift by $5000 \times \frac{1}{1-MPC} = 5000 \times 4 = 20000$. That is, we now have $P = 50$ and $Y = 60000$, so we are on the gray AD curve.
- The price level then rises to 70, so real GDP is at 40000.
- Now keep in mind the reasons for the downward slopedness of the AD curve—the wealth effect changes C, the foreign trade effect changes $NX = EX - IM$, and the interest rate effect changes I. So when the price level goes from 50 to 70, the reduction in GDP from 60,000 to 40,000 comes *entirely* from the reduction in private spending, whereas G doesn't change.
- This means that G goes from 5000 to 10000 and stays there even after the price level increase. It follows that the remainder of GDP, $40000 - 10000 = 30000$, is private spending.

Problem 6. Refer to the data given in Question 1. Suppose that the government increases its purchases (G) by 10,000 units and at the same time it raises taxes (TX) by 10,000 units to finance the increase in spending. The price level remains at P = 50 units. As a result the level of real GDP will equal _____ units.

Answer 6. Via the expenditure multiplier effect, the increase in government expenditure will cause GDP to increase by

$$10,000 \times 4 = 40000.$$

The increase in taxes will cause disposable income to change by -10000. Therefore consumption will change by $-10000 \times MPC = -10000 \times 0.75 = -7500$. Then via the expenditure multiplier effect, GDP will change by $-7500 \times 4 = -30000$.

So overall, GDP will change by $40000 - 30000 = 10000$. Thus GDP goes from 40000 to 50000.

Problem 7. Refer to the data given in Question 1. Suppose that the government increases transfer payments (TR) by 10,000 units and at the same time it raises taxes (TX) by 10,000 units to finance the increase in TR. The price level remains at $P = 50$ units. As a result, the level of real GDP will equal _____ units.

Answer 7. The taxes will decrease disposable income by 10,000; and then the transfer payments will increase disposable income by 10,000. So disposable income won't change. Thus neither will anything else—GDP is still 40000.

Problem 8. *True or False.* What we can say for sure is that, when the real wealth goes up, the aggregate demand function will shift to the right.

Answer 8: False. Real wealth is nominal wealth divided by price level. So a change in real wealth can be caused by a change in either nominal wealth—which will shift the AD curve to the right—or a change in the price level—which will be a movement *along* the AD curve.

Problem 9. *True or False.* European goods become cheaper and as a result we import more European goods. This event causes the AD function to shift to the right.

Answer 9: False. Use $Y = C + I + G + EX - IM$. If European goods become cheaper, it means that we will import more European goods; and they will import fewer of our goods. Therefore EX goes down, IM goes up, and hence Y goes down. This shifts AD to the left.

Problem 10. *True or False.* American goods become cheaper and as a result Europeans buy more American goods. This event causes the AD function to shift to the right.

Answer 10: False. American goods becoming cheaper means there is a change in the American price level. This means we move *along* the AD curve—there is no shift.