

ECON 1010 Principles of Macroeconomics

Solutions to the Final Exam

Professor: David Aadland

Spring Semester 2017

May 11th, 2017

Section 1: Multiple Choice and T/F (120 pts). Circle the correct answer; each is worth three points.

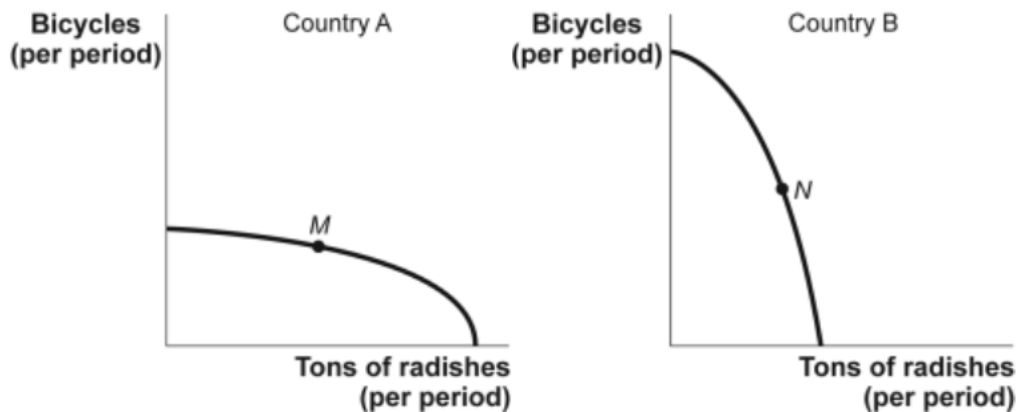
1. Scarcity exists when:
 - a. making choices among two or more alternatives is not necessary.
 - b. individuals can have more of any good without giving up anything.
 - c. individuals can have more of one good but only by giving up something else.
 - d. resources are unlimited.

2. A friend comes up to you and offers to give you a free ticket to the local professional team's baseball game that night. You decide to attend the game. The game takes five hours and costs you \$15 for transportation. If you had not attended the game, you would have worked at your part-time job for \$8 an hour. What is the cost to you of attending the game?
 - a. The cost is zero—the ticket is free.
 - b. \$65
 - c. \$40
 - d. \$55

3. Macroeconomics deals with:
 - a. bits and pieces of the economy
 - b. the question of how a business unit should operate profitably.
 - c. the working of the entire economy or large sectors of it.
 - d. how individuals make decisions.

4. The economic policy of changing the quantity of money, hence the interest rate, hence overall spending in the economy, is known as:
 - a. monetary policy.
 - b. fiscal policy.
 - c. free-market policy.
 - d. trickle-down policy.

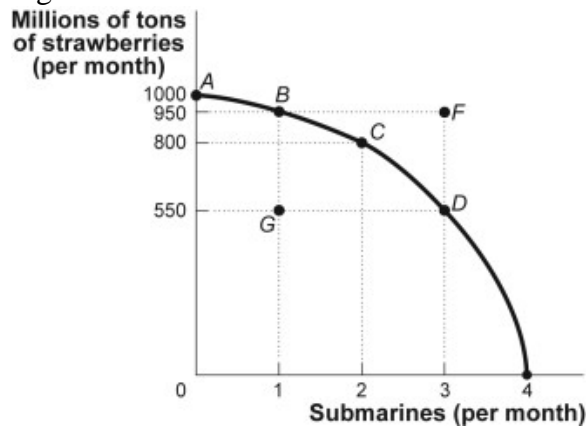
5. Figure: Bicycles and Radishes I



Look at the Figure: Bicycles and Radishes I. It shows the production possibility frontiers for two countries that produce only radishes and bicycles. The axes of both graphs are measured in equivalent units. Country A is now operating at point M, and Country B is now operating at point N. The opportunity cost of producing an additional ton of radishes would be greater in:

- Country A.
- Country B.
- neither; the opportunity cost would be the same in both countries.
- It is not possible to determine the opportunity costs because it is impossible to determine the slope of the nonlinear production possibility frontiers.

6. Figure: Strawberries and Submarines II



Look at the Figure: Strawberries and Submarines II. Suppose the economy is now operating at point A. The first submarine, which is achieved at point B, would have an opportunity cost of million tons of strawberries.

- 50
- 150
- 400
- 950

7. Free trade between countries:

- should be based on absolute advantage.
- will allow wealthy countries to exploit less developed nations.
- will shift the domestic production possibility frontier to the right.
- will allow for greater levels of consumption than without trade.

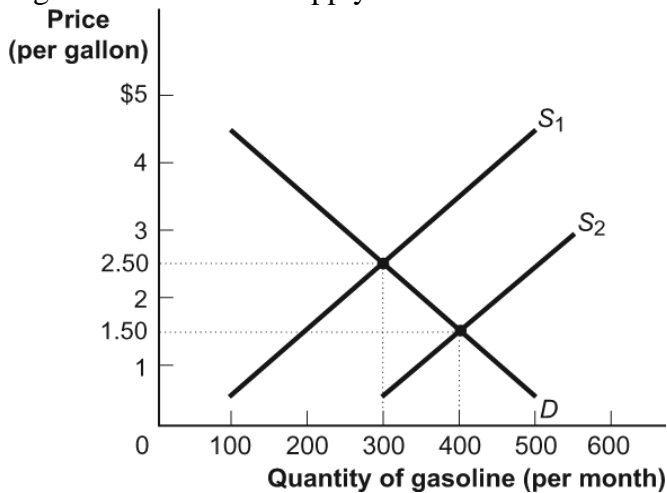
8. As the population of a city grows, this will cause a(n) in the demand for pizza, and the demand for pizza will shift to the _____.

- decrease; left
- decrease; right
- increase; left
- increase; right

9. If the price of DVD players falls and the quantity of DVD players sold increases, which statement may have caused this change?
- Demand for DVD players shifts to the right.
 - Demand for DVD players shifts to the left.
 - Supply of DVD players shifts to the right.
 - Supply of DVD players shifts to the left.

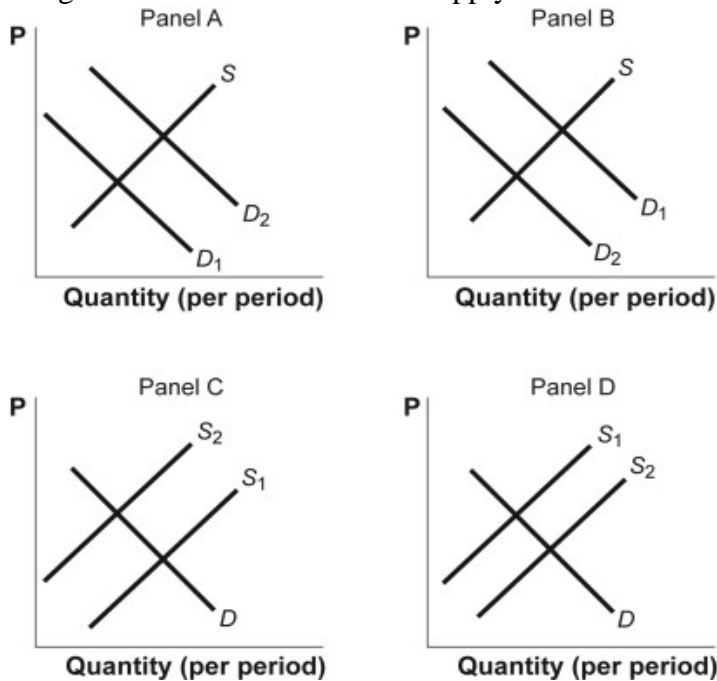
10. One of the consequences of the minimum wage has been:
- decreased unemployment for low-skill workers.
 - workers offering to work off the books for less than the minimum wage.
 - lower production costs for small businesses.
 - increased employment for high-skill workers.

11. Figure: Demand and Supply of Gasoline



- Examine the figure Demand and Supply of Gasoline. A factor that may have changed supply from S1 to S2 is:
- better technology in the production of gasoline.
 - increased demand.
 - lower labor productivity in gasoline production.
 - increased prices of substitutes in production for gasoline.

12. Figure: Shifts in Demand and Supply II



Examine the figure Shifts in Demand and Supply II. The graph shows how supply and demand might shift in response to specific events. Suppose a fall frost destroys one-third of the nation's grapefruit crop. Which panel best describes how this will affect the market for vitamin B12 tablets, which are a substitute in consumption for grapefruit?

- a. panel A
- b. panel B
- c. panel C
- d. panel D

13. An upper limit on the quantity of a good that can be bought and sold is a:

- a. quota limit.
- b. price ceiling.
- c. price floor.
- d. tariff.

14. The most widely used indicator of conditions in the labor market is the:

- a. number of job openings advertised.
- b. average wage rate.
- c. level of average household income.
- d. unemployment rate.

15. The total volume of business sales in the economy is much larger than GDP because:

- a. GDP understates the value of total output.
- b. the output approach to measuring GDP excludes intermediate transactions.
- c. GDP includes transfer payments.
- d. GDP excludes exports.

16. Table Pizza Economy III

	Gino's pizza	Bruno's spaghetti	Carlo's cookies	Aldo's salad
2010 units of output	4,000	3,000	2,000	5,000
2010 price per unit	\$10	\$9	\$6	\$7
2011 units of output	4,000	1,000	1,000	2,000
2011 price per unit	\$8	\$6	\$1	\$4

Considering 2010 as the base year in Table: Pizza Economy III, given that total population was 1140 in 2010 and 1300 in 2011, real GDP per capita in 2010 was:

- a. \$80.
- b. \$53.
- c. \$60.
- d. \$100.**

17. The unemployment rate is the ratio of all of the people:

- a. out of work to the total population.
- b. out of work to those over age 16.
- c. unemployed to those looking for work.
- d. unemployed to those in the labor force.**

18. If a country has a working-age population of 200 million, 135 million people with jobs, and 15 million people unemployed and seeking employment, then its unemployment rate is:

- a. 4 percent.
- b. 7.5 percent.
- c. 10 percent.**
- d. 67.5 percent.

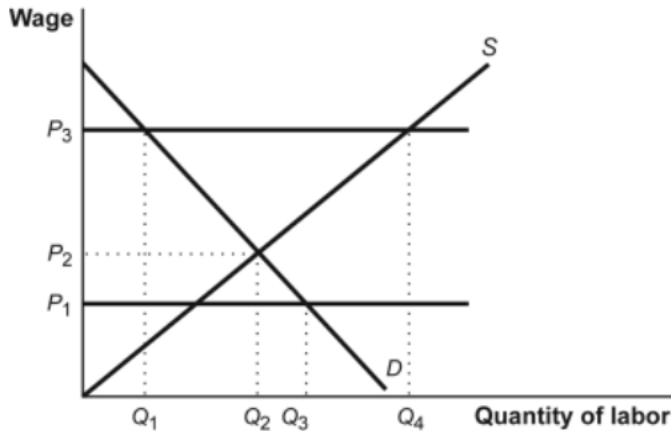
19. The labor force is equal to the:

- a. sum of employment and unemployment.**
- b. population minus the number of employed.
- c. sum of the employed and the underemployed.
- d. number of people working in the economy.

20. Discouraged workers are those individuals who:

- a. are getting paid too little.
- b. do not like their job.
- c. are working part time but are looking for a full-time job.
- d. have given up looking for a job.**

21. Figure: The Minimum Wage



Look at the Figure: The Minimum Wage on the labor market. By how much does the quantity of labor demanded fall when the government imposes a binding minimum wage of P_3 ?

- $Q_4 - Q_1$.
- $Q_3 - Q_2$.
- $Q_2 - Q_1$.
- $Q_4 - Q_2$.

22. The deviations in the actual rate of unemployment away from the natural rate of unemployment is called:

- seasonal.
- frictional.
- cyclical.
- structural.

23. The inflation rate

- is equal to the price level.
- is the annual rate of increase in the price level.
- is always increasing when the overall price level is increasing.
- will be zero when prices are increasing at a constant rate.

24. Table: Price Index

Year	Price Index
2008	100
2009	104
2010	103
2011	110

Consider the information in the Table: Price Index provided. What is the inflation rate between the years 2010 and 2011?

- 6.8 percent
- 4 percent
- 1 percent
- 6 percent

25. Real GDP per capita, growing at a constant rate over a 35-year period, doubles in size at the end of that period. What must the annual growth rate of real GDP per capita be for this economy?
- a. 1 percent
 - b. 2 percent**
 - c. 4 percent
 - d. 15 percent
-
26. Assuming a non-zero interest rate, the dollar amount of a future payment is _____ its present value
- a. always exactly the same as
 - b. usually exactly the same as
 - c. less than
 - d. more than**
-
27. Given an annual interest rate of 2%, the present value of a future payment of \$1,500 to be paid in one year is:
- a. \$1,250.55.
 - b. \$1,470.59.**
 - c. \$1,530.
 - d. \$1,500.
-
28. Which is considered to be investing in a physical asset?
- a. purchasing shares of stock in IBM
 - b. selling shares of stock in IBM
 - c. buying a bond issued by IBM
 - d. buying a new factory that produces IBM handheld devices**
-
29. The budget balance is equal to:
- a. taxes plus government spending.
 - b. taxes minus government spending.**
 - c. consumption plus investment.
 - d. imports minus exports.
-
30. An increase in the demand for loanable funds would most likely be caused by a(n):
- a. increase in the market interest rate.
 - b. increase in business tax rates.
 - c. increase in the amount of expected business opportunities.**
 - d. decrease in the amount of expected business opportunities.
-
31. If the MPC is 0.8, then the multiplier is:
- a. 4.
 - b. 5**
 - c. 8.
 - d. 10.

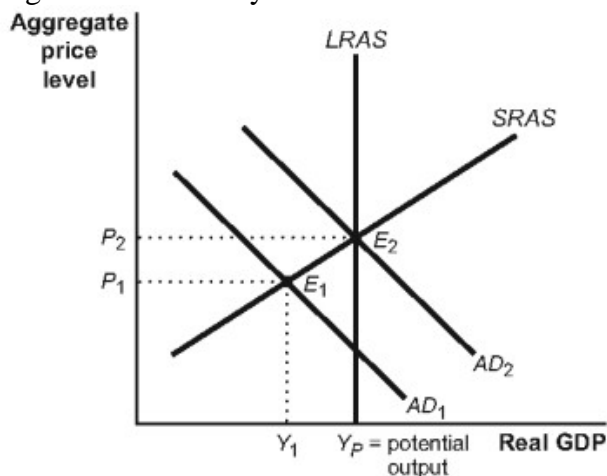
32. In the short run, wages and some prices are considered to be:

- a. sticky.
- b. unpredictable.
- c. extremely flexible.
- d. irrelevant.

33. If the economy is currently in a recessionary gap, real GDP will be _____ potential output.

- a. below
- b. the same as
- c. above
- d. in equilibrium with

34. Figure: Fiscal Policy I



According to the Figure: Fiscal Policy I, suppose that this economy is in equilibrium at E₁. If there is an increase in government purchases, then:

- a. AD₂ will shift to the left, causing an increase in the price level and a decrease in real GDP.
- b. AD₂ will shift to the left, causing a decrease in the price level and a decrease in the real GDP.
- c. AD₁ will shift to the right, causing an increase in the price level and an increase in real GDP.
- d. AD₁ will shift to the right, causing a decrease in the price level and an increase in real GDP.

35. If the marginal propensity to save is 0.1, then the government spending multiplier has a value of

- a. one-tenth.
- b. 9.
- c. 10.
- d. one-ninth.

36. The government has a budget deficit if:

- a. its total revenues are equal to its total expenditures.
- b. its total revenues are less than its total expenditures.
- c. its total revenues are greater than its total expenditures.
- d. the money supply is less than total expenditures.

37. Currency in circulation, traveler's checks, and checkable bank deposits are the components of:
- a. M1 only.
 - b. M2 only.
 - c. both M1 and M2.
 - d. M3 only.
-
38. Suppose the reserve ratio is 20 percent and Sam's bank is exactly meeting its reserve requirement and wishes to hold no excess reserves. If Sam deposits \$500 into his checking account, his bank can increase loans by:
- a. \$500.
 - b. \$2500.
 - c. \$100.
 - d. \$400.
-
39. If the reserve ratio is 25 percent and the money supply increases by \$100,000, then the initial reserve injection by Federal Reserve was:
- a. \$2500.
 - b. \$10,000.
 - c. \$4000.
 - d. \$25,000.
-
40. The decline in the U.S. labor force participation rate over the last decade was primarily due to:
- a. robots and automation.
 - b. women entering the labor force.
 - c. retirement of the baby boomers.
 - d. President Trump.

Section B: Short Answer Questions. (80 points)

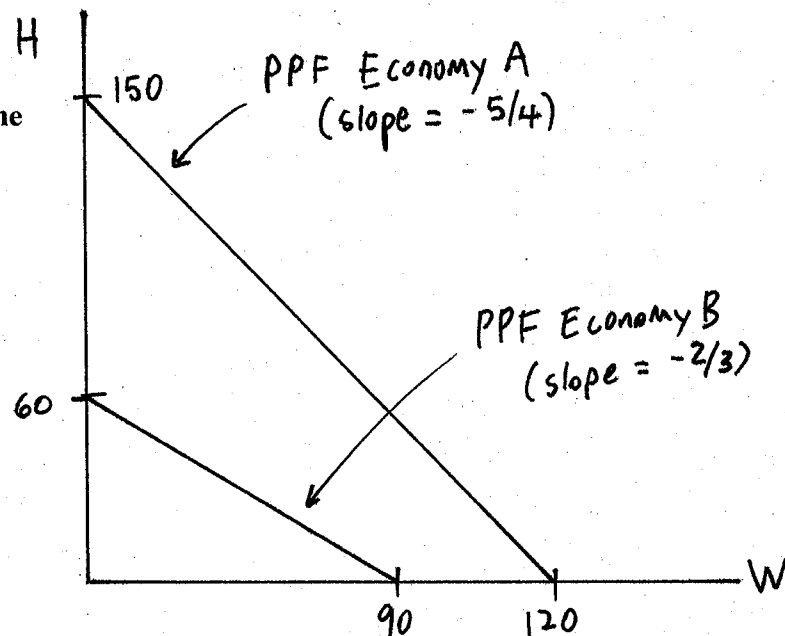
#1. (20 pts) Economies A and B produce only two goods: watches (W) and hats (H). Given the same inputs, the two economies can produce a maximum output of each good according to the following table.

	Quantity of Watches (W)	Quantity of Hats (H)
Economy A	120	150
Economy B	90	60

a) (5 pts) Assuming constant opportunity costs, draw the production possibilities frontiers (PPF) for each of the two economies. Let the horizontal axis measure W and the vertical axis measure H. What is the slope of each PPF and how does it relate to opportunity cost?

SOLUTIONS:

The slope of the PPF for Economy A is $-5/4$. The slope of the PPF for Economy B is $-2/3$. For Economy A, the opportunity cost of producing one more watch is giving up $5/4$ hats. For Economy B, the opportunity cost of producing one more watch is giving up $2/3$ hats.



b) (5 pts) Which economy has an absolute advantage in producing watches? Which economy has a comparative advantage in producing hats and which in watches? Explain.

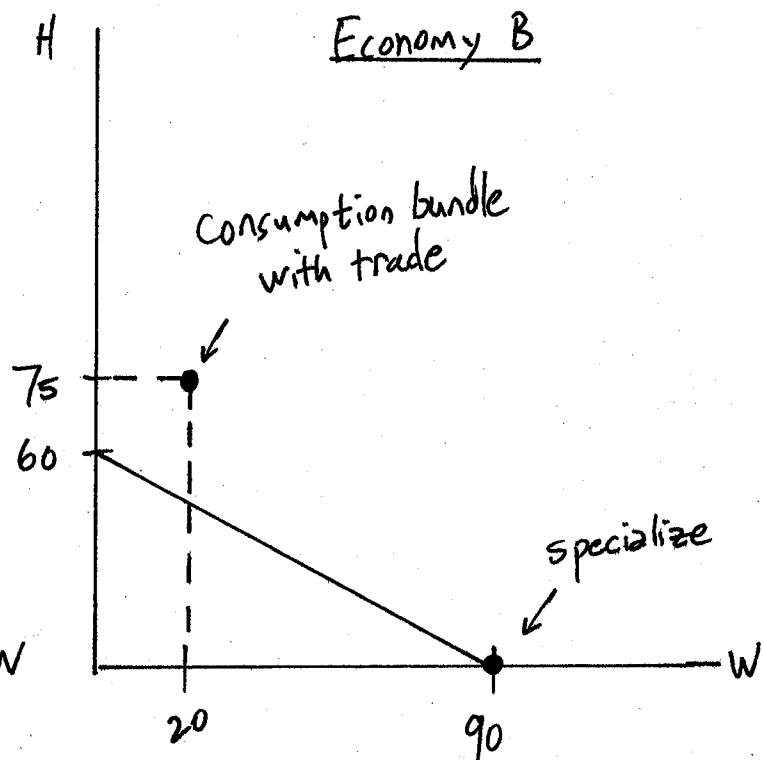
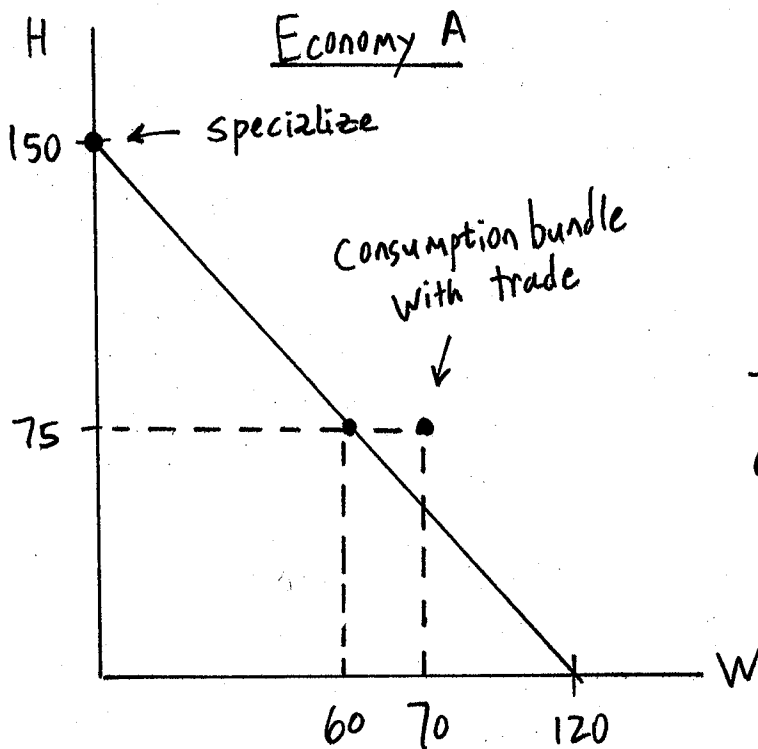
SOLUTIONS:

Economy A has an absolute advantage in watches (as well as an absolute advantage in hats). Since Economy A gives up more hats for each watch, it has a comparative advantage in hats. Economy B has a comparative advantage in watches because they give up fewer hats.

c) (10 pts) If each economy specializes in the good they have a comparative advantage in, determine a combination of output and trade for each country that allows both to consume outside of their PPF and show it graphically.

SOLUTIONS:

Since Economy A has a comparative advantage in hats, they will produce 150 H and no W. Since Economy B has a comparative advantage in watches, they will produce 90W and no H. Then they trade. Assume Economy A keeps 75 H and trades 75 H to Economy B. Assume Economy B keeps 20 W and trades 70 W to Economy A. These combinations are plotted below. After trade, the consumption bundles lie outside the PPFs. This shows the mutually beneficial gains from trade.



#2. (20 pts) Consider the quantity of production and prices for a two-good economy as depicted in the table below. Assume for any calculations that the base year is 2015.

Year	Quantity Good X	Price per unit of X	Quantity Good Y	Price per unit of Y
2015	20	5	6	10
2016	25	4	7	15
2017	30	4	8	25

a) (10 pts) Calculate real GDP, nominal GDP and the GDP deflator for each of the three years in the table. What is the inflation rate based on this deflator between 2016 and 2017? What is the growth rate in real GDP between 2015 and 2016?

SOLUTIONS:

Nominal GDP for year 2015, 2016 and 2017 are

$$GDP_{2015} = (20 \times \$5) + (6 \times \$10) = \$160$$

$$GDP_{2016} = (25 \times \$4) + (7 \times \$15) = \$205$$

$$GDP_{2017} = (30 \times \$4) + (8 \times \$25) = \$320$$

Real GDP for year 2015, 2016 and 2017 are

$$Real\ GDP_{2015} = (20 \times \$5) + (6 \times \$10) = \$160$$

$$Real\ GDP_{2016} = (25 \times \$5) + (7 \times \$10) = \$195$$

$$Real\ GDP_{2017} = (30 \times \$5) + (8 \times \$10) = \$230$$

The GDP deflator for year 2015, 2016 and 2017 are

$$\frac{\$160}{\$160} \times 100 = 100; \quad \frac{\$205}{\$195} \times 100 = 105; \quad \text{and} \quad \frac{\$320}{\$230} \times 100 = 139$$

The 2016-2017 GDP deflator inflation rate is: $\frac{139-105}{105} \times 100 = 32.4\%$

The 2015-2016 growth rate in real GDP is: $\frac{\$195-\$160}{\$160} \times 100 = 21.9\%$

b) (10 pts) Assuming that a market basket for a typical consumer is given by the quantities X=3 and Y=2, calculate the CPI for each of the three years in the table. What is the CPI inflation rate between 2016 and 2017?

SOLUTIONS:

$$CPI_{2015} = \frac{\$35}{\$35} \times 100 = 100; \quad CPI_{2016} = \frac{\$42}{\$35} \times 100 = 120; \quad \text{and} \quad CPI_{2017} = \frac{\$62}{\$35} \times 100 = 177$$

The 2016-2017 CPI inflation rate is: $\frac{177-120}{120} \times 100 = 47.5\%$

#3. (20 pts) Keynesian Cross Model

a) (10 pts) Consider an economy where planned investment is 100, autonomous consumption is 150, government spending is 50 and the MPC is 0.9. The economy is closed and there are no taxes. Find the equilibrium level of real GDP (Y) and show the equilibrium using the graphical version of the income-expenditure (Keynesian Cross) model.

SOLUTIONS:

The equilibrium level of real GDP is equal to the planned aggregated spending.

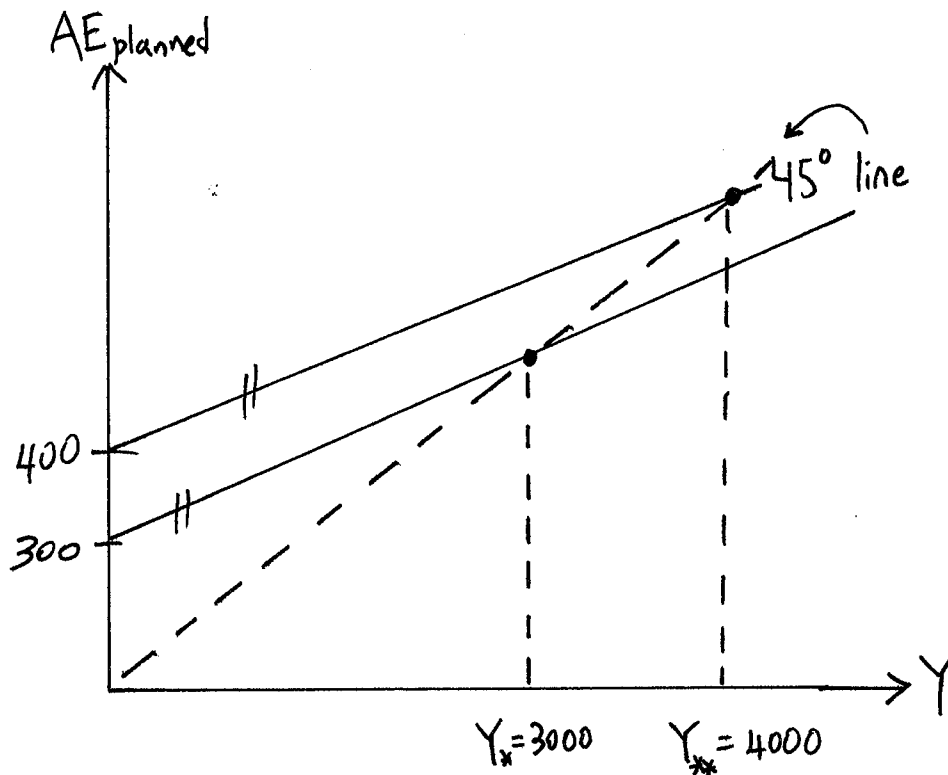
$$GDP(\text{or } Y) = AE_{\text{planned}} = C + I_{\text{planned}} + G$$

$$C = 150 + 0.9 \times Y$$

Substitute and solve for Y :

$$Y = 150 + 0.9 \times Y + 100 + 50$$

$$Y_* = 3000$$



b) (10 pts) Assume that businesses perceive a growing economy and planned investment doubles. Use the spending multiplier to find the new equilibrium and demonstrate the change in equilibrium on your graph above.

SOLUTIONS:

To cut the deficit in half, the government must cut spending from 100 to 50. The new equilibrium is

$$Y = 150 + 0.9 \times Y + 200 + 50$$

$$Y_* = 4000$$

This makes sense given that the spending multiplier is $\frac{1}{1-MPC} = 10$. An increase of 100 in planned investment spending increases real GDP by 1000.

#4. (20 points) AD-SRAS-LRAS Model

A climbing stock market is likely to make consumers feel wealthier and increase household spending. Assume the economy starts in a long-run equilibrium; then use an AD-SRAS-LRAS model to show graphically the short-run and long-run transition of the economy from an increase in the stock market. Label the initial equilibrium point A, the short-run equilibrium point B, and the long-run equilibrium point C. Explain the transition from points A to B to C in a short paragraph assuming that there is no government intervention. Then explain how the Federal Reserve could use open-market operations to respond if they were concerned about future inflation.

SOLUTIONS:

The climbing stock market will cause households to spend more and shift the AD curve to the right. The new AD curve intersects the SRAS at point B. In the short run, the economy will transition from point A to point B, such that real GDP and the price level rise. The economy is booming. In the long run, nominal wages will increase and firms will raise prices. This will cause the SRAS curve to shift up and to the left until the economy eventually returns to a long-run equilibrium at point C. The long-run transition may be very slow.

If the Fed is concerned about the booming economy and future inflation, they can implement contractionary fiscal policy. To do this, the Fed will decrease the money supply and raise interest rates to shift the AD curve back to its original position. The Fed typically uses open-market operations to stabilize the economy. In this case, the Federal Open Market Committee (FOMC) would sell government securities and decrease banking reserves. This will cause the federal funds rate to increase, choking off private investment, and contracting the economy to avoid higher inflation.

