Principles of Macroeconomics (Econ 001) Signature: _____
Drake University, Fall 2012
William M. Boal Printed name: _____

FINAL EXAMINATION VERSION C

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Cell phones or other wireless devices are NOT permitted. Point values for each question are noted in brackets. Points will be subtracted for illegible writing or incorrect rounding. Maximum total points are 200.

I. Multiple choice: Circle the one best answer to each question. [1 pt each, 21 pts total]

(1) "An increase in unemployment benefits would raise consumer spending" is an example of
a. a positive statement.
b. a normative statement.
c. both of the above.
d. none of the above.

(2) Monetary exchange is more common today than bartering because
a. bartering is often illegal whereas anything can be legally bought and sold with money.
b. bartering is a lost art.
c. monetary exchanges are subject to less tax.
d. bartering requires a "double coincidence of wants."

(3) Efficient well-functioning markets
a. ensure that every potential buyer and seller makes a trade.
b. obey the "law of one price."
c. generate a variety prices from which buyers and sellers may choose.
d. converge to a price such that consumer surplus equals producer surplus.
e. all of the above.

(4) Recently, the price of natural gas has fallen and the quantity sold has increased. This could be caused by a
a. rightward shift in the demand for natural gas.
b. rightward shift in the supply of natural gas.
c. leftward shift in the demand for natural gas.
d. leftward shift in the supply of natural gas.

(5) At the trough of a business cycle, actual GDP is
a. above potential GDP.
b. below potential GDP.
c. equal to potential GDP.
d. cannot be determined from information given.

(6) In the early 1980s, the inflation rate in the U.S. decreased from about 10 percent to about 4 percent per year. This is an example of
a. deflation.
b. reflation.
c. hyperinflation.
d. disinflation.

(7) Investment spending in the national accounts does *not* include purchases of
a. new homes.
b. tractor-trailer trucks.
c. telecommunications equipment.
d. certificates of deposit in banks.
e. new factories.

(8) Government purchases in the national accounts do *not* include
a. salaries of public school teachers.
b. pay for members of the armed services.
c. welfare programs such as Temporary Aid for Needy Families.
d. spending on national parks.
e. spending on highway construction.

(9) Unemployment caused by a recession is called
a. structural unemployment.
b. frictional unemployment
c. cyclical unemployment.
d. all of the above.

(10) If the interest rate rises in the United States and remains constant in other countries, imports will increase and exports will decrease because
a. foreign importers will be more able to borrow money.
b. the dollar will appreciate against other currencies.
c. the dollar will depreciate against other currencies.
d. consumers will increase their total spending.
e. exporters will be unable to borrow money.

(11) Thomas Malthus believed that in the long run, output per person would
a. fall at a constant rate.
b. grow at a constant rate indefinitely.
c. grow at increasing rates indefinitely.
d. converge to the level of subsistence.

(12) Most economists believe that a higher rate of inflation will, in the long run, bring
a. a higher rate of unemployment.
b. no change in the rate of unemployment.
c. a lower rate of unemployment.
d. cannot be determined from information given.

(13) Assume the required reserve ratio is 0.1 and that banks hold no excess reserves. If people like to hold $0.20 in currency for every $1.00 they hold in bank accounts, then the money multiplier equals
a. 1.2.
b. 1.3.
c. 3 1/3.
d. 4.
e. 5.

(14) On a graph like that below, most economic fluctuations cause the economy to
a. move horizontally left and right.
b. move vertically up and down.
c. cycle in a clockwise direction.
d. cycle in a counterclockwise direction.

(15) According to the "permanent-income hypothesis," which is likely to cause the largest increase in consumption spending *this year*?
a. A 10 percent tax increase for this year only.
b. A 10 percent tax cut for this year only.
c. A 10 percent tax increase lasting ten years.
d. A 10 percent tax cut lasting ten years.

(16) Suppose the interest rate in the U.S. decreases but interest rates in the rest of the world remain unchanged. Then the U.S. dollar will
a. remain unchanged.
b. appreciate.
c. depreciate.
d. cannot be determined from information given.

(17) Under a monetary policy rule typical of most countries, if inflation rises, the central bank will try to
a. reduce the rate at which the government spends money.
b. increase the real interest rate.
c. increase the money supply.
d. raise taxes.

(18) If a recession occurs, which will automatically increase without action by Congress or the President?
a. military spending.
b. income tax payments to the government.
c. spending on unemployment insurance benefits.
d. highway construction spending.
e. all of the above.
f. none of the above.

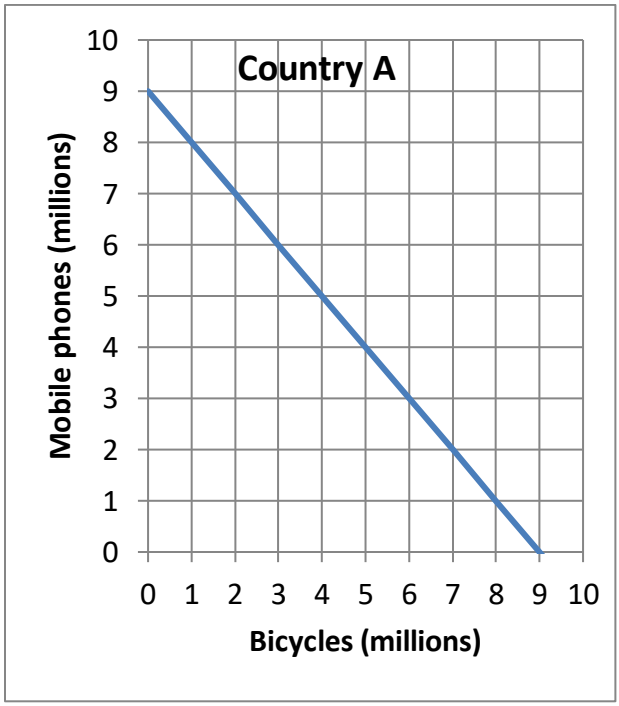
(19) Countries tend to have lower inflation rates in the long run if the heads of their central banks are
a. directly elected by the people—who after all must live with the consequences of central bank policies.
b. under the direct control of elected officials and can be fired at any time.
c. more independent of elected officials.
d. cannot be determined from information given.

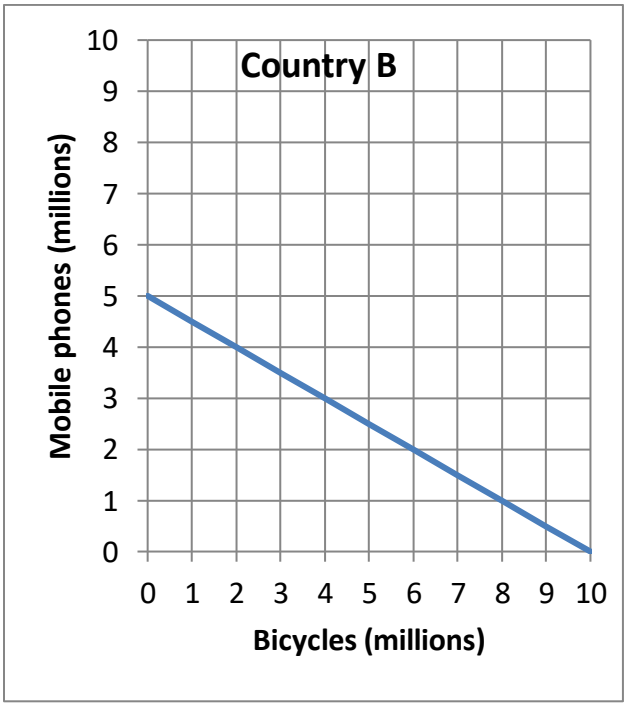
(20) The inflation rate has been higher in Brazil than in the United States. In the long run, this should cause the exchange rate (the price of the U.S. dollar in terms of Brazilian *reals*) to
a. remain unchanged.
b. rise.
c. fall.
d. fluctuate randomly.

(21) A country that fixes its exchange rate can no longer have an independent
a. monetary policy.
b. fiscal policy.
c. trade policy.
d. industrial policy.
e. foreign policy.

II. Problems: Insert your answer to each question in the box provided. Use graphs and margins for scratch work. Only the answers in the boxes will be graded. Work carefully: partial credit is not normally given for questions in this section.

(1) [Comparative advantage, gains from trade: 17 pts] Country A and Country B each produce mobile phones and bicycles. They each face a tradeoff between these two products because their workforces are limited. Their production possibility curves are shown below.





a. [2 pts] What is Country A's opportunity cost of producing a mobile phone? bicycles

b. [2 pts] What is Country B's opportunity cost of producing a mobile phone? bicycles

c. [2 pts] What is Country A's opportunity cost of producing a bicycle? mobile phones

d. [2 pts] What is Country B's opportunity cost of producing a bicycle? mobile phones

e. [2 pts] Which country has a comparative advantage in producing mobile phones?

f. [2 pts] Which country has a comparative advantage in producing bicycles?

g. [3 pts] Fill in the blanks: *Both* countries can consume combinations of mobile phones and bicycles *outside* their individual production possibility curves if _____ produces and exports **three million** bicycles to _____, which produces and exports _____ million mobile phones in return.

h. [2 pts] **Plot** the trade that you propose in part (g) on the graph above. For each country, plot and label the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

(2) [Economic capital: 6 pts] Which of the following are examples of *economic capital* ? Answer YES or NO.

a. Railroad locomotives.		d. State and local government bonds.	
b. Server computers.		e. 18-wheel trucks.	
c. Warehouses.		f. Corporate bonds.	

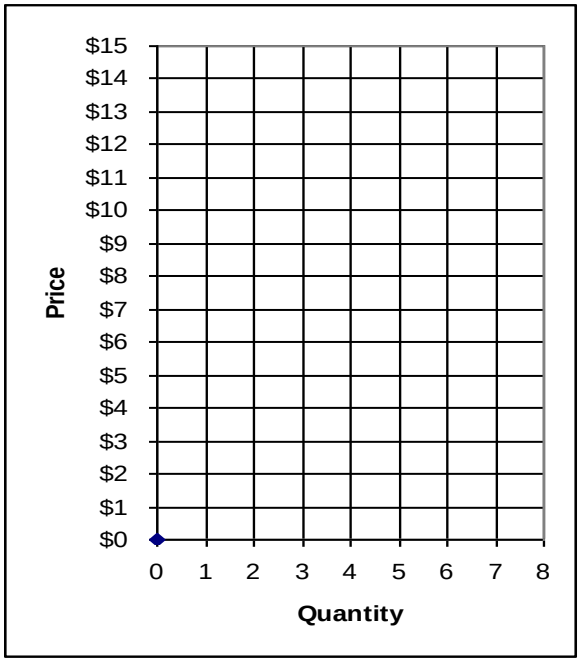
(3) [Market equilibrium: 12 pts] Suppose seven buyers and seven sellers engage in a market similar to the activity we did in class. Each buyer may buy at most one unit and each seller may sell at most one unit, but no one is forced to trade. Assume that buyers and sellers are each trying to maximize their personal earnings (or "gains from trade"). Earnings for each buyer equal the buyer's value of the good minus the price paid. Earnings for each seller equal the price received minus the seller's cost of the good. Earnings of persons who do not trade are zero. Buyers' values and sellers' costs are given in the following table.

Buyer	*Value*
Bob	$14
Barb	$11
Ben	$11
Bailey	$11
Brian	$ 9
Betty	$ 5
Bert	$ 1

Seller	*Cost*
Sue	$ 1
Steve	$ 2
Sam	$ 3
Sven	$ 4
Sarina	$12
Sean	$13
Sally	$14

Suppose with some experience, the market settles on a single price. All trades are made at that price.

Use this graph for scratch work.



a. Suppose the price were $13. Would there be *excess demand*, or *excess supply*, or *neither*?	
b. What is the *equilibrium* price likely to be, in whole dollars?	$
c. How many units of the good will be sold in this market?	units
d. Compute the total revenue received by sellers (which equals the total spending by buyers).	$
e. Compute the combined total earnings (or gains from trade) of all buyers and sellers. (Check your answer carefully! No partial credit for being "close"!)	$
f. Who enjoys higher earnings in this particular market, the *buyers* or the *sellers?* Or are buyers' total earnings *equal* to sellers' total earnings?	

(4) [Inflation: 2 pts] According the U.S. Bureau of Labor Statistics, the CPI was 220.414 in December 2010, and was 227.033 in December 2011. Compute the annual rate of inflation over this period to the nearest tenth of a percentage point.

	%

(5) [Components of GDP: 16 pts] The imaginary country of Concrete Land has just four industries: the Raw Concrete Industry, the Building Construction Industry, the Road Construction Industry, and the Birdbath Industry. There are no other goods and no foreign trade. In a recent year:

- The Raw Concrete Industry produced and sold $50 billion of raw concrete to the Building Industry, $50 billion to the Road Construction Industry, and $100 billion to the Birdbath Industry for a total of $200 billion in sales.
- The Road Construction Industry produced and $300 billion of roads for the government.
- The Birdbath Industry produced and sold $900 billion of birdbaths to consumers.
- The Building Industry produced and sold $100 billion of buildings (a capital good) to each industry (including itself) for a total of $400 billion in sales.

a. Compute the spending components of Concrete Land's GDP.

Consumption (C)	$ billion
Investment (I)	$ billion
Government purchases (G)	$ billion
Total GDP (Y)	$ billion

b. Compute value added by each industry in Concrete Land.

Raw Concrete Industry	$ billion
Building Industry	$ billion
Road Construction Industry	$ billion
Birdbath Industry	$ billion

(6) [Spending components of GDP: 8 pts] The table below shows data for the United States as reported by the Bureau of Economic Analysis. [Hint: Some of the data are extraneous and not needed for solving this problem.]

	2001
Social Security and other social insurance payments	$1.1 trillion
Gross investment	$1.7 trillion
Government purchases	$1.8 trillion
Imports	$1.4 trillion
National defense	$0.4 trillion
Exports	$1.0 trillion
Personal current transfer receipts	$1.1 trillion
Consumption	$7.1 trillion

a. Does the U.S. have a trade *surplus* or a trade *deficit* ?

b. Compute net exports (X).

c. Compute GDP.

d. Compute national saving (S).

$ trillion
$ trillion
$ trillion

(7) [Aggregate production function: 5 pts] According to the theory of the aggregate production function, *potential* GDP depends on which of the following? Answer *true* or *false*.

a. The number of workers and the average number of hours worked by each of them.	
b. The amount of physical or economic capital available.	
c. The level of stimulus spending by the federal government.	
d. The level of technology, or "know-how," in the economy.	
e. The money supply.	

(8) [Measuring the labor force: 8 pts]] The U.S. Bureau of Labor Statistics reported that in October 2010, 139.1 million people were employed, 14.6 million people were unemployed, and 84.8 million working-age people were not in the labor force.

a. Compute the working-age population to the nearest tenth of a million.	million
b. Compute the employment-to-population ratio to the nearest tenth of a percentage point.	%
c. Compute the labor force participation rate to the nearest tenth of a percentage point.	%
d. Compute the unemployment rate to the nearest tenth of a percentage point.	%

(9) [Growth of capital stock: 2 pts] The following data (in chained 2005 dollars) were reported by the U.S. Bureau of Economic Analysis.

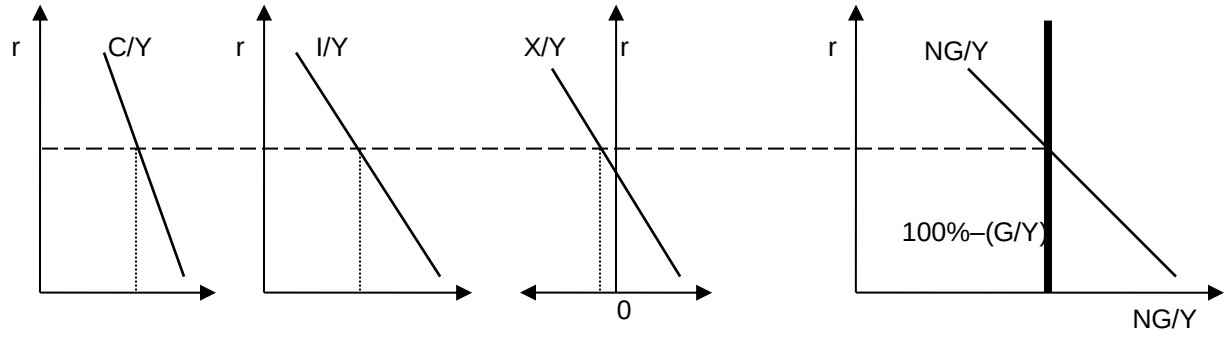
Consumption in 2005	$8,804 billion
Investment in 2005	$2,104 billion
Exports in 2005	$1,305 billion
Private capital stock at end of 2004	$28,648 billion
Imports in 2005	$2,028 billion
Labor income (compensation of employees) in 2005	$7,065 billion
Corporate profits in 2005	$1,247 billion
Depreciation in 2005	$1,290 billion
Government purchases in 2005	$2,370 billion

Compute the private capital stock at the end of 2005. [Hint: Some data are extraneous and not needed for this problem.]

$	billion

(10) [Interest rate and GDP shares: 16 pts] Suppose there is an increase in business confidence: business leaders become more optimistic about the future. Use the spending allocation model to answer the following questions.

a. [4 points] In the graphs below, draw the shifts in curves (if any) that would result from this change.



b. [2 pts] Does the long-run real interest rate (r) *increase*, *decrease*, or remain *constant*?

c. [2 pts] Does the share of consumption spending (C/Y) *increase*, *decrease*, or remain *constant*?

d. [2 pts] Does the share of investment spending (I/Y) *increase*, *decrease*, or remain *constant*?

e. [2 pts] Does the share of net exports (X/Y) *increase*, *decrease*, or remain *constant*?

f. [2 pts] Does the long-run growth rate of potential GDP *increase*, *decrease*, or remain *constant*?

g. [2 pts] Justify your answer to part (f).

(11) [Technical change: 4 pts] Over the period 1965 to 1990, the annual growth rate of output per worker in India was 2.5% and the annual growth rate of capital per worker was 3.6%. Assume that the share of capital income plus depreciation in national income was about **(1/3),** as it is in the United States.

a. Compute the contribution of capital to productivity growth, to the nearest tenth of a percentage point. ____ %

b. Contribute the contribution of technology to productivity growth, also called the Solow residual, to the nearest tenth of a percentage point. ____ %

(12) [Measuring the money supply: 10 pts] The U.S. government reported the following data for July 2007. [Hint: Some of the data are extraneous and not needed for this problem.]

Index of industrial production	100.2
Travelers checks, demand deposits, and other checkable deposits	$612 billion
Consumer credit outstanding	$2,460 billion
Currency	$759 billion
Credit card balances	$909 billion
Bank reserves	$42 billion
Savings deposits, small time deposits, money-market mutual funds, and other deposits on which check writing is limited or not allowed	$5,935 billion
GDP	$14,029 billion
Federal debt held by the public	$4,949 billion

a. Compute the money supply measure "M1."	$ billion
b. Compute the money supply measure "M2."	$ billion
c. Compute the monetary base.	$ billion
d. Compute the money multiplier for "**M2**" to the nearest tenth.	
e. Compute the velocity of money ("**M2**") to the nearest tenth.	

(13) [Quantity equation: 2 pts] Growth rates for various items over the period 1995-2005 are reported below. [Hint: Some of the data are extraneous and not needed for this problem.]

Money supply (M2)	6.3 %
Imports (2005 dollars)	7.9 %
Real GDP (2005 dollars)	3.3 %
Exports (2005 dollars)	4.4 %
Employment	1.3 %

Assuming the velocity of money were constant, what should have been the average annual rate of inflation over this period, according to the quantity equation? Give an answer to the nearest tenth of a percentage point.	%

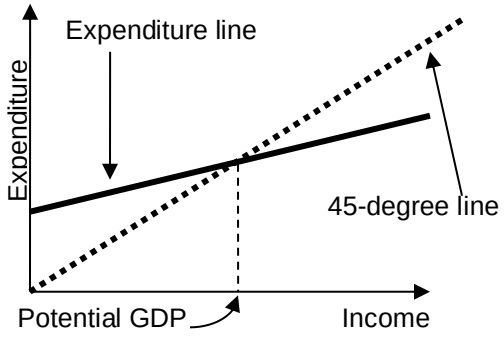
(14) [Consumption function, Keynesian cross, Keynesian multipliers: 8 pts] Suppose the marginal propensity to consume is 0.65 and the marginal propensity to import is 0.05 . Assume no other spending components of GDP are affected by aggregate income.

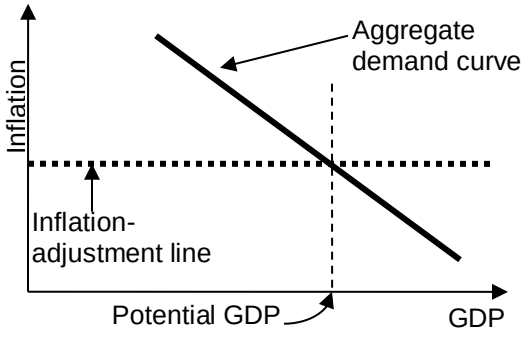
a. Compute the slope of the consumption function.	
b. Compute the slope of the expenditure line in the Keynesian cross diagram.	
c. Compute the government-purchases multiplier.	
d. By how much does GDP increase in the short run if government purchases (G) increase by $ 120 billion?	$ billion
e. How much of an increase in government purchases is required to raise GDP by $ 120 billion?	$ billion
f. Compute the tax-cut multiplier.	
g. How much of a tax cut is required to raise GDP by $ 120 billion?	$ billion
h. Suppose taxes and government purchases are to be increased simultaneously by exactly the same amount. What amount is required to raise GDP by $ 120 billion?	$ billion

(15) [How business cycles begin: 20 pts] Assume GDP initially equals potential GDP and consider the *short-run* consequences of each scenario in the left column. Indicate whether and how the scenario shifts the expenditure line in the Keynesian cross diagram. Then indicate whether and how it shifts the "aggregate demand" (AD) curve in the diagram used in Taylor's textbook in the *short run*. Indicate whether the scenario is likely to cause a recession, a boom or neither (assuming GDP was initially equal to potential GDP). **On the next page, on the graphs for each scenario, show the shifts in curves.**

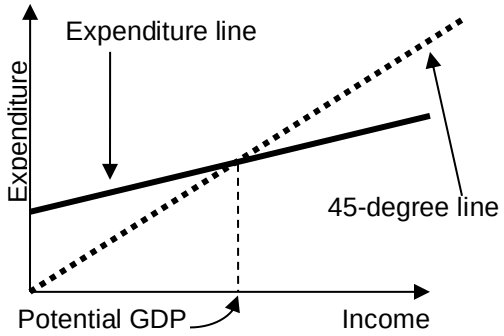
	Expenditure line shifts *up*, *down* or *unchanged?*	AD curve shifts *left*, *right*, or *unchanged?*	Causes *recession*, *boom*, or *neither?*
a. Taxes are increased.			
b. Government purchases are increased.			
c. Monetary policy is "relaxed."			
d. A sharp drop in the price of houses makes consumers feel poorer.			

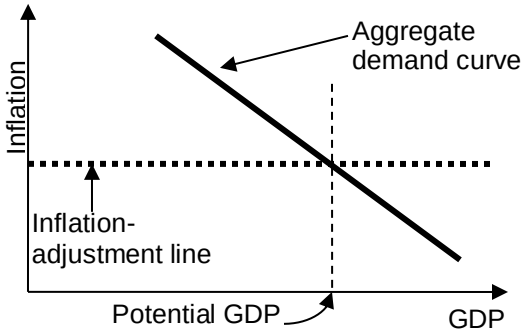
a. Taxes are increased.



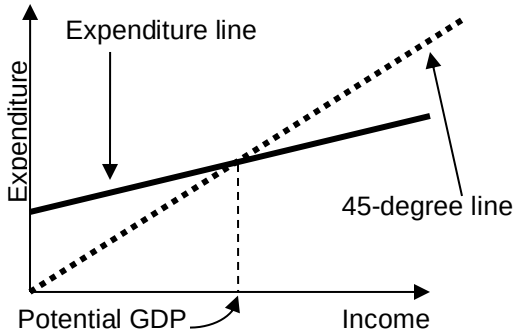


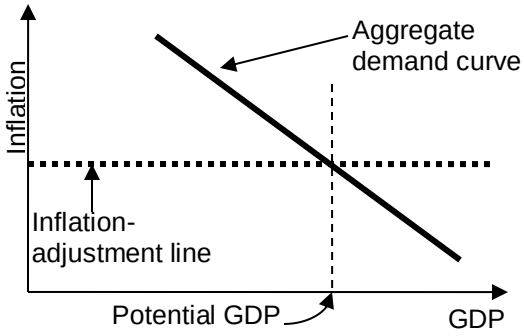
b. Government purchases are increased.



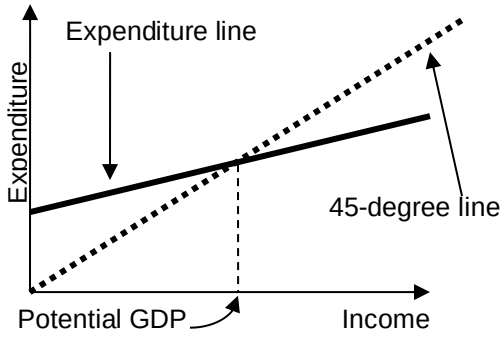


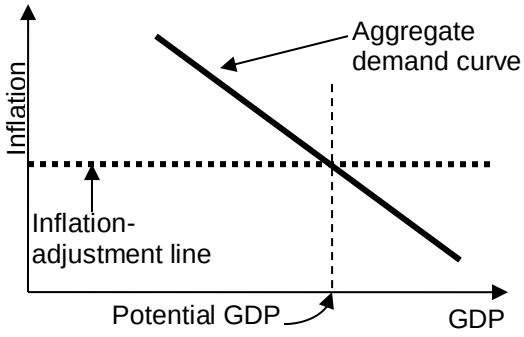
c. Monetary policy is "relaxed."



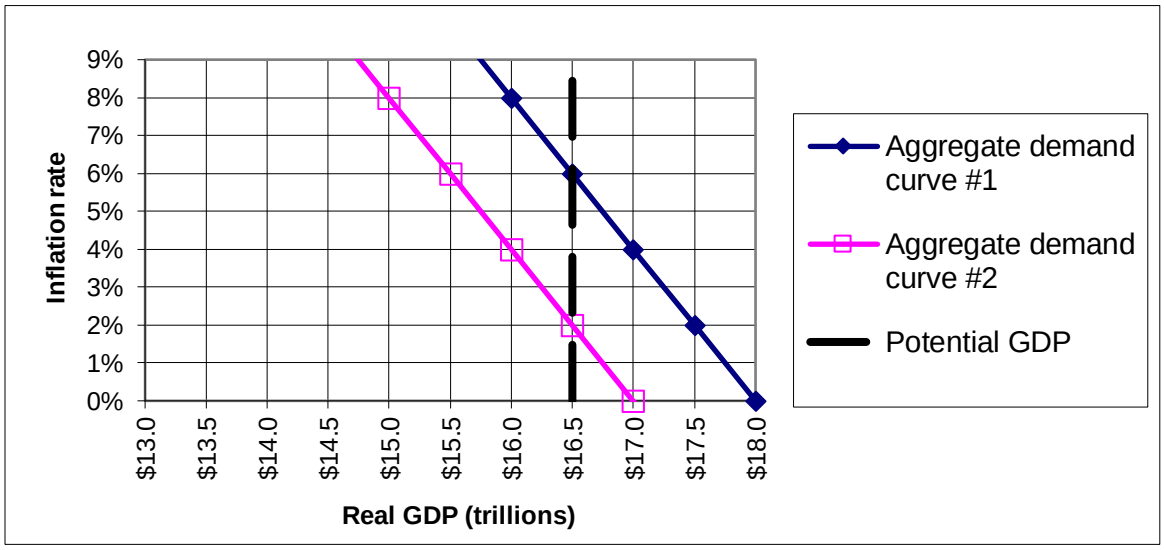


d. A sharp drop in the price of houses makes consumers feel poorer.





(16) [Inflation adjustment: 16 pts] Consider the following graph of the macroeconomy, similar to those in Taylor's textbook. Suppose that the aggregate demand curve is currently at "aggregate demand curve #1" and the inflation rate is currently **6%.** **[**Hint: Begin by drawing the "inflation adjustment" line.]



a. What is the current level of real GDP? $ trillion

b. Is the unemployment rate currently *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment?

Now suppose the government passes a large tax increase and the aggregate demand curve shifts to "aggregate demand curve #2."

c. What is the level of real GDP in the short run? $ trillion

d. What is the inflation rate in the short run? %

e. Is the unemployment rate *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment in the short run?

f. What will be the level of real GDP in the long run? $ trillion

g. What will be the inflation rate in the long run? %

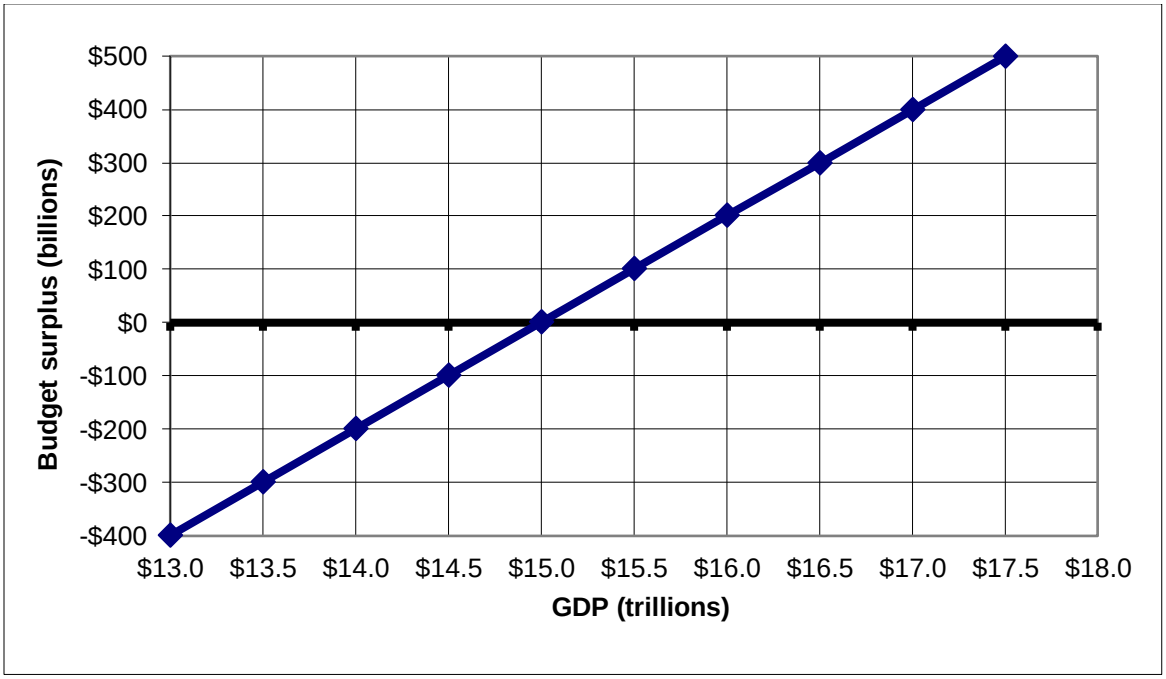
h. Is the unemployment rate *greater* than the natural rate, *less* than the natural rate, or *equal* to the natural rate of unemployment in the long run?

(17) [Fiscal policy, tax rates: 4 pts] Suppose a single person who has $20,000 in income owes $1154 in taxes. If the same person had $21,000 in income, then the person would owe $1304 in taxes.

a. Compute this person's *average tax rate* to the nearest tenth of a percentage point. %

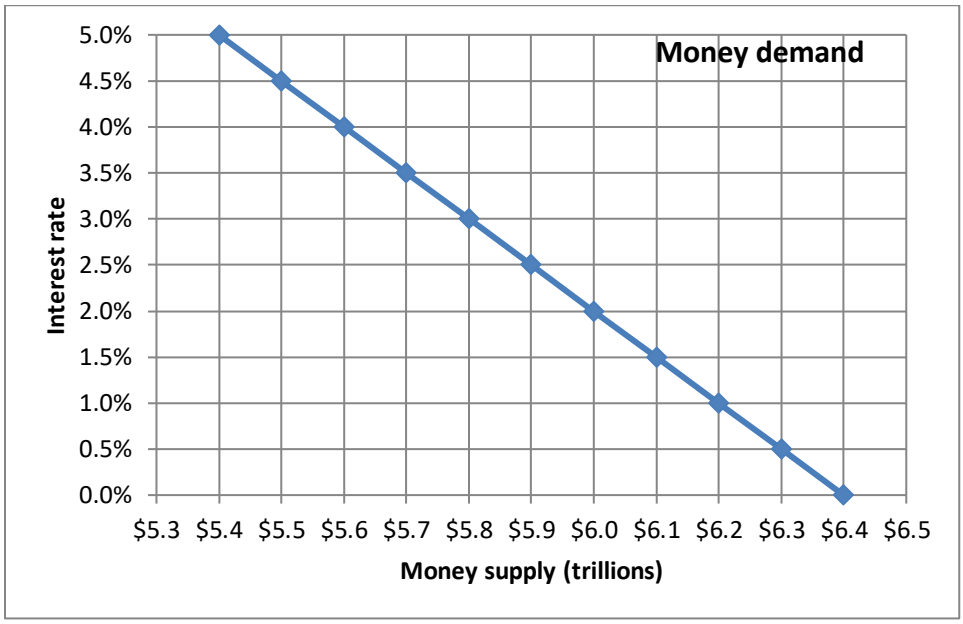
b. Compute this person's *marginal tax rate* to the nearest tenth of a percentage point. %

(18) [Fiscal policy: 5 pts] The graph below shows the relationship between the federal budget surplus (or deficit) and the level of GDP. Suppose potential GDP is $15.0 trillion and actual level of GDP is $16.0 trillion.



a. Is the economy in a *boom*, a *recession*, or *neither*?	
b. Is there an actual budget *surplus*, an actual budget *deficit*, or an actual *balanced budget*?	
c. How much?	$ billion
d. Is there a structural budget *surplus*, a structural budget *deficit*, or a structural *balanced budget*?	
e. How much?	$ billion

(19) [Monetary policy: 8 pts] Suppose the money-demand curve is given by the following graph.



First, suppose the Federal Reserve *increases* the money supply by **$ 0.1 trillion** dollars.

a. Will the interest rate *increase or decrease* in the short run? _____

b. By how much--that is, by how many percentage points? _____ percentage points

Alternatively, suppose that the Federal Reserve wants to *raise* the interest rate by **1.5** percentage points.

c. Must the Federal Reserve *increase* or *decrease* the money supply? _____

d. By how much? $ _____ trillion

(20) [International accounts: 6 pts] The table below shows 2009 data for the United States in billions of dollars. [Hint: Some of the data are extraneous and not needed for solving this problem.]

Exports of goods and services	1575
Current government expenditures	5000
Factor income receipts from foreigners	599
Imports of goods and services	1956
Foreign-owned assets in the United States	20883
Factor income payments to foreigners	471
Net transfers from abroad	-123
Current government tax receipts	2423
U.S.-owned assets abroad	18487

a. Compute the trade balance (also called "net exports" or "X"). $ _____ billion

b. Compute net factor income from rest of world. $ _____ billion

c. Compute the current account balance. $ _____ billion

III. Critical thinking: Write a one-paragraph essay answering one question below (your choice). [4 pts]

(1) Suppose there is a recession in Europe and European GDP decreases. Will this *increase* or *decrease* GDP in the United States? Explain your reasoning.

(2) The U.S. federal government now runs large budget deficits. Put differently, government saving in the U.S. is negative. Suppose the Congress and the President succeed in reducing the *budget* deficit. Will this likely affect the *trade* deficit? If so, how? Explain your reasoning.

Please circle the question you are answering and write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.

[end of exam]