

ECON 201: Introduction to Macroeconomics

Professor Robert Gordon

Final Exam:

December 12, 2019

NAME _____

Circle the **TA session** you attend:

Mario - 3PM

Jason - 3PM

Gaston - 3PM

Mario - 4PM

Jason - 4PM

Gaston - 4PM

Directions: This test is in two parts, a multiple choice question part and a short-answer part. Use this answer packet to complete the exam. Calculators are permitted. Books, notes, reference materials, etc. are prohibited. Good luck!

Part 1: Referring to the questions in the Multiple Choice Questions Packet, choose the one alternative that best completes the statement or answers the question. Each question is worth one point. There is no penalty to guessing, so be sure to answer all of them.

Write your answers in the following table using capital letters. **If you change your mind, do not write one answer on top of the other.**

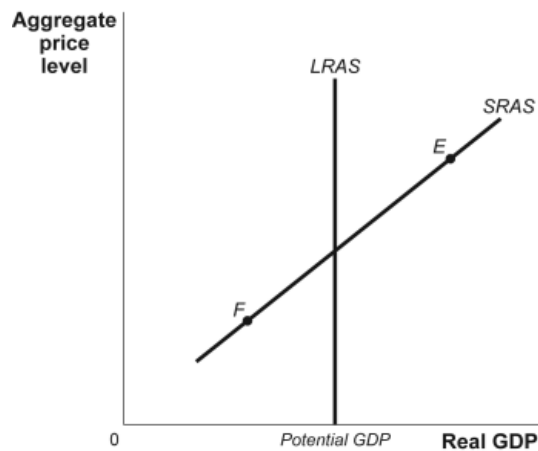
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

1. The national income and product accounts keep track of:
 - A) consumer spending
 - B) interest rates
 - C) money supply
 - D) exchange rates

2. Which two goods are most likely substitutes in consumption?
 - A) loaves of bread and sticks of butter
 - B) loaves of bread and toasters
 - C) loaves of bread and hamburger buns
 - D) loaves of bread and gasoline

Use the following to answer question 3:

Figure: Aggregate Supply



3. (Figure: Aggregate Supply) Refer to Figure: Aggregate Supply. If the economy is at point *E*, nominal wages will _____, and the short-run aggregate supply curve will shift _____ until actual potential is _____ potential output.
 - A) increase; left; equal to
 - B) increase; right; greater than
 - C) decrease; right; equal to
 - D) decrease; right; less than

4. The _____ curve shows the positive relationship between the aggregate price level and the quantity of aggregate output supplied when wages and prices are not fully flexible.
- A) aggregate demand
 - B) short-run aggregate supply
 - C) aggregate spending
 - D) long-run aggregate supply

Use the following to answer question 5:

Table: Monetary Aggregates

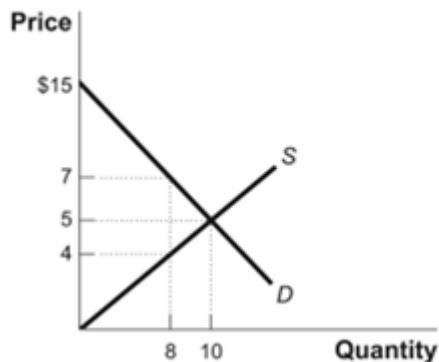
Monetary Aggregates (in billions)	
Currency in circulation	\$ 500
Money market funds	550
Time deposits	800
Savings deposits	1,110
Checkable bank deposits	380
Traveler's checks	15
American Express gift cards	25

5. (Table: Monetary Aggregates) Refer to Table: Monetary Aggregates. The value of M1 is:
- A) \$880 billion.
 - B) \$895 billion.
 - C) \$2,005 billion.
 - D) \$920 billion.
6. Suppose that the economy enters a recession and real GDP falls. All else equal, we would expect:
- A) the money demand curve to shift inward.
 - B) the money demand curve to shift outward.
 - C) a downward movement along a fixed money demand curve.
 - D) an upward movement along a fixed money demand curve.
7. The income expenditure model predicts that if the marginal propensity to consume is 0.75 and the federal government increases spending by \$100 billion, real GDP will increase by:
- A) \$100 billion.
 - B) \$750 billion.
 - C) \$400 billion.
 - D) \$300 billion.

8. Over the last 50 years on average the Federal Funds rate has been
- A) above the 10-year government bond rate
 - B) equal to the 10-year government bond rate
 - C) below the 10-year government bond rate
 - D) equal to the corporate bond rate
9. If the price level increases, in the short run real wages will:
- A) increase.
 - B) decrease.
 - C) remain constant.
 - D) fluctuate randomly.
10. Quantitative easing is most closely related to:
- A) easing the burden of taxation
 - B) the Fed's balance sheet
 - C) expansionary fiscal policy
 - D) the Quantity Theory of Money
11. In economic markets, a quota is a(n):
- A) lower limit on quantity.
 - B) upper limit on quantity.
 - C) maximum price.
 - D) minimum price.
12. As a result of a sharp decrease in aggregate demand between 1929 and 1933, the unemployment rate changed from _____% in 1929 to _____% in 1933.
- A) 0; 3
 - B) 3; 25
 - C) 40; 5
 - D) 25; 0

Use the following to answer question 13:

Figure: The Market for Sandwiches



13. (Figure: The Market for Sandwiches) Use Figure: The Market for Sandwiches. How much total surplus would be lost if there were a quota of eight sandwiches that could be legally exchanged?
- A) \$3
 - B) \$24
 - C) \$27
 - D) \$30
14. A course packet item compared production of various commodities in South Korea vs. North Korea. Which of the following does North Korea produce more of than South Korea?
- A) electricity
 - B) motor vehicles
 - C) coal
 - D) North Korea does not produce more of any commodity
15. A recent news story reported that the Organization of Petroleum Exporting Countries is expected to decrease the supply of oil next summer. Summer is traditionally a time of increased demand for oil because of vacation travel. What would be the combined effect of these two events on the summer market for gasoline?
- A) an increase in the price and the quantity
 - B) an increase in the price and an unpredictable change in the quantity
 - C) an unpredictable change in both the price and the quantity
 - D) an unpredictable change in the price and a decrease in the quantity

16. Suppose that the budget deficit of a country remains positive and unchanged for five years. The federal debt will:
- A) remain constant.
 - B) fall.
 - C) rise.
 - D) either remain constant or fall.
17. Inflation:
- A) is a movement of the economy toward economic growth.
 - B) can be thought of as an increase in a nation's standard of living.
 - C) is a sustained fall in the overall level of prices.
 - D) is a sustained increase in the overall level of prices.
18. The incentives built into the market economy ensure that resources are put to good use and that opportunities to make people better off are not wasted. This means that:
- A) people usually are not selfish enough to exploit opportunities to make themselves better off.
 - B) markets move toward equilibrium.
 - C) resources should be used as efficiently as possible to achieve society's goals.
 - D) markets usually lead to efficiency.
19. Which price index measures the cost of living?
- A) the producer price index
 - B) the wholesale price index
 - C) the consumer price index
 - D) the GDP deflator
20. What do a rubber-necking traffic jam and the paradox of thrift have in common?
- A) Individual behavior has large negative consequences for the whole of society.
 - B) Seemingly bad behavior ends up harming everyone.
 - C) Seemingly careless behavior leads to good times for all.
 - D) Government intervention can only make matters worse.
21. The debt-GDP ratio is constant when
- A) the percent change in the deficit is equal to the percent change in real GDP
 - B) the percent change in the debt is equal to the percent change in nominal GDP
 - C) the percent change in the deficit is equal to the percent change in nominal GDP
 - D) the percent change in the debt is equal to the percent change in real GDP

22. **Scenario: First National Bank**

First National Bank has \$80 million in checkable deposits, \$15 million in deposits with the Federal Reserve, \$5 million cash in the bank vault, and \$5 million in government bonds. The bank has liabilities of:

- A) \$105 million.
- B) \$95 million.
- C) \$80 million.
- D) \$100 million.

23. The formula for the rule of 70, where n is number of years and r is growth rate, is expressed as:

- A) $n * 70 = r$.
- B) $n / r = 70$.
- C) $r / n = 70$.
- D) $n * r = 70$.

24. The demand curve for loanable funds slopes:

- A) upward since it takes a higher rate of return to get more funds.
- B) downward because more potential projects yield 10% than yield 5%.
- C) upward because higher rates of return are necessary to cover higher costs.
- D) downward because quantity demanded is lower when the price to borrow money is higher.

25. Which of the following trough dates marked the beginning of the longest economic expansion in the history of U.S. business cycles?

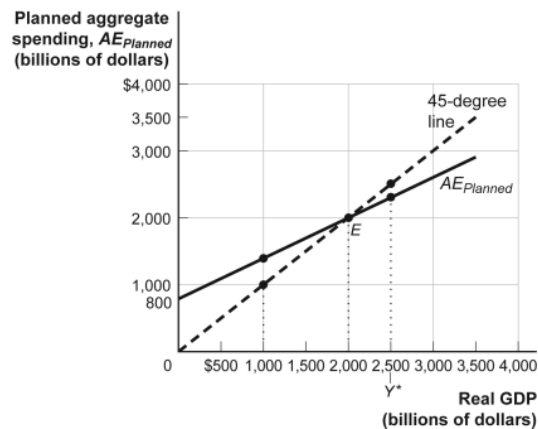
- A) November 1982
- B) March 1991
- C) November 2001
- D) June 2009

26. Between 2000 and 2006, there was a housing bubble in the United States. A bubble is:

- A) a fluctuation in asset prices that leads to inherent instability.
- B) an increase in asset prices driven by unrealistic expectations about future prices.
- C) individuals reselling assets rapidly to make quick profit.
- D) speculation by unscrupulous investors.

27. Comparing now to 2007, the assets of the Federal Reserve have increased by a factor of
- A) 2
 - B) 4
 - C) 8
 - D) 16
28. Suppose that investment spending increases by \$50 billion and as a result the equilibrium income increases by \$200 billion. The investment multiplier is:
- A) 8.
 - B) 10.
 - C) 4.
 - D) 0.25.
29. If overall spending declines and thus the economy contracts, the government could counter this by:
- A) raising tax rates.
 - B) decreasing government transfers.
 - C) increasing government spending.
 - D) decreasing government spending.

Use the following to answer question 30:



30. (Figure: Income–Expenditure Equilibrium) Use Table: Income–Expenditure Equilibrium. If investment spending decreases in this economy, then the:
- A) aggregate expenditures curve will shift up, increasing the income–expenditure equilibrium.
 - B) aggregate expenditures curve will shift down, decreasing the income–expenditure equilibrium.
 - C) economy will move upward along the aggregate expenditures curve, increasing the income–expenditure equilibrium.
 - D) economy will move downward along the aggregate expenditures curve, decreasing the income–expenditure equilibrium.
31. When a person deposits money in a bank, it is:
- A) only an asset for the bank.
 - B) only a liability for the bank.
 - C) a liability and an asset for the bank.
 - D) most likely to result in a decrease in the money supply.
32. Real GDP equals \$400 billion, the government collects 25% of any increase in real GDP in the form of taxes, and the marginal propensity to consume is 0.8. If the government decreases spending by \$40 billion, real GDP will decrease by:
- A) \$40 billion.
 - B) \$80 billion.
 - C) \$100 billion.
 - D) \$200 billion.
33. Over the period since 1970, the only four years when the federal government ran a sustained budget surplus were in the:
- A) late 1970s.
 - B) late 1980s.
 - C) late 1990s.
 - D) late 2000s.
34. The threat of future inflation:
- A) makes people reluctant to lend money for long periods.
 - B) makes people eager to lend money for long periods.
 - C) has no effect on lending money.
 - D) increases the value of money paid back in the future.

35. From the standpoint of economic growth, banks are important to:
- A) fight inflation.
 - B) keep interest rates low.
 - C) channel savings into investment.
 - D) channel investment into savings.
36. The "Obama Stimulus" of 2009-2010 consisted of
- A) tax cuts and expenditure reductions
 - B) tax cuts and expenditure increases
 - C) tax cuts, transfer reductions, and expenditure increases
 - D) tax cuts, transfer increases, and expenditure increases
37. A decrease in aggregate demand is seen as a(n) _____ the aggregate demand curve.
- A) downward movement along
 - B) upward movement along
 - C) shift to the left of
 - D) shift to the right of
38. Capital inflow into a country is associated with:
- A) imports exceeding exports.
 - B) a small amount of funds available for domestic investment.
 - C) imports equaling exports.
 - D) exports exceeding imports.

Use the following to answer question 39:

Table: The Production Possibilities for Tractors and Crude Oil

Country	Tractors	Crude oil (thousands of barrels)
United States	80	40
Mexico	60	180

39. (Table: The Production Possibilities for Tractors and Crude Oil) Use Table: The Production Possibilities for Tractors and Crude Oil. In the United States, the opportunity cost of producing 30,000 barrels of crude oil is _____ tractors.
- A) 60
 - B) 80
 - C) 100
 - D) 120

40. A plot of actual real GDP and potential real GDP for the postwar U.S. reveals that:
- A) most years experienced inflationary gaps.
 - B) most years experienced recessionary gaps.
 - C) fiscal policy succeeded in keeping actual real GDP equal to potential real GDP.
 - D) monetary policy succeeded in keeping actual real GDP equal to potential real GDP.
41. Changes in short-run aggregate supply can be caused by changes in:
- A) wages.
 - B) wealth.
 - C) government spending.
 - D) consumption spending.
42. Restrictions on free international trade designed to insulate domestic industries from competitive market forces that originate beyond the borders of the country are _____ policies.
- A) competitive
 - B) protectionist
 - C) free-trade
 - D) antitrust

Use the following to answer question 43:

Table: Individual and Aggregate Consumption Functions

Current Disposable Income	Consumer Spending		
	Andy	Fred	Mark
\$0	\$150	\$100	\$200
1,000	950	800	1,100

43. (Table: Individual and Aggregate Consumption Functions) Use Table: Individual and Aggregate Consumption Functions. The marginal propensity to consume in the aggregate consumption function is:
- A) 0.5.
 - B) 0.7.
 - C) 0.8.
 - D) 0.9.

44. The economy has grown by 4% per year over the past 30 years. During the same period, the labor force has grown by 1% per year and the quantity of physical capital has grown by 5% per year. Each 1% increase in physical capital per worker is estimated to increase productivity by 0.4%. Assume that human capital has not changed during the past 30 years. What is the growth rate of productivity?
- A) 5%
 - B) 4%
 - C) 3%
 - D) 1.6%
45. Which entity acts to protect depositors from a bank run by insuring all deposits up to \$250,000?
- A) the FDIC
 - B) the Department of Justice
 - C) the Federal Reserve
 - D) the Office of Management and Budget
46. Which of the following did NOT experience hyperinflation:
- A) Germany in 1922-1923
 - B) Mexico in 1994
 - C) Venezuela in 2018-2019
 - D) Zimbabwe in 2008
47. The BEST way to reduce financial risk is to:
- A) buy stock only in a major company.
 - B) buy bonds only in a major company.
 - C) buy a variety of assets, both financial and physical.
 - D) never buy stock in foreign companies.
48. If the economy is at potential output and the Fed decreases the money supply, in the short run the price level will likely _____ and real GDP will likely _____ .
- A) increase; increase
 - B) increase; decrease
 - C) decrease; increase
 - D) decrease; decrease

49. The original purpose of savings and loans was to:
- A) help businesses issue stocks and bonds.
 - B) invest in money market mutual funds.
 - C) accept deposits from state and local governments and loan them to businesses in need of short-term loans.
 - D) accept savings and loan them to home buyers for long-term mortgages.
50. Since the great Recession of 2007-09, the actual rate of inflation on average has been:
- A) below the Fed's target rate of inflation
 - B) equal to the Fed's target rate of inflation
 - C) above the Fed's target rate of inflation
 - D) below for five years, above for the next five years
51. The difference between a budget deficit and government debt is that:
- A) a deficit is the amount by which government spending exceeds tax revenues, whereas debt is the sum of money the government owes.
 - B) debt is the amount by which government spending exceeds tax revenues, whereas a deficit is the sum of money the government owes.
 - C) a deficit is measured as of a particular time, whereas debt is measured over time.
 - D) a deficit harms the economy, whereas debt improves the economy.
52. The opportunity cost of holding money is:
- A) zero.
 - B) the interest rate when someone uses a credit card.
 - C) the difference between interest rates on monetary assets and on nonmonetary assets.
 - D) the discount rate.
53. A change in _____ does NOT shift the money demand curve.
- A) the interest rate
 - B) the price level
 - C) banking technology
 - D) real GDP

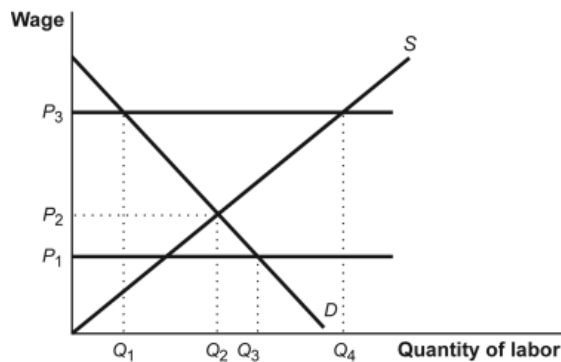
Use the following to answer question 54:

Table: Aggregate Spending

Real GDP	<i>YD</i>	<i>C</i>	<i>I</i> _{planned}
0	0	100	600
500	500	500	600
1,000	1,000	900	600
1,500	1,500	1,300	600
2,000	2,000	1,700	600
2,500	2,500	2,100	600
3,000	3,000	2,500	600
3,500	3,500	2,900	600
4,000	4,000	3,300	600

54. (Table: Aggregate Spending) Use Table: Aggregate Spending. Suppose the economy has no government spending and no foreign trade. With no taxes or transfers, real GDP equals disposable income (*YD*). The income–expenditure equilibrium real GDP is found at _____. If planned investment fell to \$300, the new income–expenditure equilibrium real GDP would fall to _____.
- A) \$3,500; \$2,500
 B) \$3,500; \$2,000
 C) \$3,000; \$1,500
 D) \$4,000; \$2,500

Use the following to answer question 55:



55. (Figure: The Minimum Wage) Use Figure: The Minimum Wage. What is the quantity of labor demanded at a binding minimum wage of P_3 ?
- A) Q_1
 B) Q_2
 C) Q_3
 D) Q_4

56. The main objective of contractionary monetary policy is to:
- A) decrease aggregate demand
 - B) close a recessionary gap
 - C) increase investment
 - D) raise the level of output
57. The phrase "the Fed still has ammo" refers to:
- A) the Fed's ability to counteract inflation
 - B) the Fed's ability to finance Federal budget deficits
 - C) the Fed's ability to counteract recessions
 - D) the Fed's opposition to gun control
58. Abe starts exercising regularly, and after a few months he can do twice as much of everything. In a single day, Abe can now make 10 hamburgers or 8 milkshakes, rather than the 5 hamburgers and 4 milkshakes he made in the past. We now know that Abe's production possibility frontier has _____, but his opportunity costs of making milkshakes have _____.
- A) shifted right; not changed
 - B) shifted right; decreased
 - C) not changed; increased
 - D) not changed; decreased
59. The annual percentage change in the aggregate price level is negative when there is:
- A) deflation.
 - B) disinflation.
 - C) inflation.
 - D) spiraling inflation.
60. GDP may be calculated as the sum of:
- A) consumer spending, investment spending, government purchases of goods and services, and exports minus imports.
 - B) consumer spending, investment spending, government transfer payments, and exports minus imports.
 - C) consumer spending, investment spending, government purchases of goods and services, and exports.
 - D) exports and imports only.

Answer Key

1. A
2. C
3. A
4. B
5. B
6. A
7. C
8. C
9. B
10. B
11. B
12. B
13. A
14. C
15. B
16. C
17. D
18. D
19. C
20. A
21. B
22. C
23. D
24. D
25. D
26. B
27. B
28. C
29. C
30. B
31. C
32. C
33. C
34. A
35. C
36. C
37. C
38. A
39. A
40. B
41. A
42. B
43. C
44. C

- 45. A
- 46. B
- 47. C
- 48. D
- 49. D
- 50. A
- 51. A
- 52. C
- 53. A
- 54. B
- 55. A
- 56. A
- 57. C
- 58. A
- 59. A
- 60. A

Problem 1 (10 points)

You are given the following information about a country

	2050		2051	
	Price	Quantity	Price	Quantity
Robots	50	50	200	48
Spaceships	100	10	25	11

a) Fill in the following table: Round all values to the nearest two decimal places, including percentages. That is, answers should look like 13,300.72 or 29.87%. (.5 points per blank, .5 for getting every blank correct.)

	2050	2051	Percentage Change (LN formula)
Nominal GDP	3500	9875	103.72
Real GDP in 2050 prices	3500	3500	0
Real GDP in 2051 prices	10250	9875	-3.73
GDP Deflator with base year 2050	100	282.14	103.72
GDP Deflator with base year 2051	34.15	100	107.45

b) What is the percentage growth rate in chain-weighted GDP Deflator? (2 points)

105.59

Problem 2 (10 points)

Consider the following real GDP figures for Fiji and New Zealand in 2010 and 2016:

	2012	2018
Fiji	100	180
New Zealand	500	580

Round all values to the nearest two decimal places, including percentages. Use the LN formulas shown in class. Use the assumption given in each part only for that part.

1. (1 point) Calculate the average annual growth rate of Fiji and New Zealand.

$$(100/6) * \ln(180/100) = 9.80\%$$

$$(100/6) * \ln(580/500) = 2.47\%$$

2. (3 points) Assume that the average annual growth rate of Fiji doubles after 2018 but the growth rate of New Zealand decreases by half. How many years would it take for Fiji's GDP to catch New Zealand's GDP, starting from 2018?

$$(2 * 9.80 * s) / 100 + \ln 180 = ((2.47/2) * s) / 100 + \ln 580$$

$$\text{Therefore } s = 6.36$$

3. (3 points) Assume that the average annual growth rate of New Zealand decreases to -1% after 2018. How many years would it take for New Zealand to shrink to one half of its real GDP in 2018?

$$-1 = (100/N) * \ln(1/2), \text{ therefore } N = 69.31$$

$$\text{(Or } N = 70, \text{ if you're thinking in terms of the rule of 70)}$$

4. (3 points) Suppose that the growth rate of Fiji is three times the growth rate of New Zealand after 2018. In addition, suppose that it takes 20 years for Fiji's GDP to catch up to New Zealand's GDP. What is the growth rate Fiji's after 2018?

$$3s * 20 / 100 + \ln 180 = s * 20 / 100 + \ln 580$$

$$\text{Therefore } s = 2.93 \text{ and Fiji's growth rate is } 8.76$$

Problem 3 (8 points)

Age	Full Time workers	Part Time workers	Don't have a job but are looking for one	Don't have a job and are not looking for one	Total
<16	0	0	0	280	280
16-20	40	100	50	250	440
21-30	120	100	100	40	360
31-50	260	180	190	60	690
51-70	120	30	100	80	330
>70	20	10	30	240	300
Total	560	420	470	950	2400

a) (1 point) Calculate the Labor Force for this economy.

$$\mathbf{LF = 560+420+470 = 1450}$$

b) (2 point) Calculate the Labor Force Participation Rate for this economy. Report it as a percentage, rounding to two decimal places.

$$\mathbf{LBPR = LF / (Total - under 16) = 1450/(2400 - 280)=68.40\%}$$

c) (2 point) Calculate the Unemployment Rate for this economy. Report it as a percentage, rounding to two decimal places.

$$\mathbf{UR = Looking\ for\ a\ job / LF = 32.41\%}$$

d) (3 points) Suppose that 60 adults emigrate to another country. Suppose also that the labor force participation rate increases to 70%. Assume no other changes. How many of the emigrants were in the labor force?

$$\mathbf{70 = 100*(1450-x)/2060}$$

$$\mathbf{Therefore\ x = 8}$$

Problem 4 (10 points)

Part 1:

Consider the following model economy:

Autonomous Consumption	600
Autonomous Taxes	300
Exports	300
Imports	100
Planned Investment	400
Government Spending	1000
Income Tax Rate	0%
Multiplier	2

Assume there are no income taxes.

- a) (1 point) Write down an expression for aggregate consumption as a function of output.

$$C = 600 + 0.5(Y-300)$$

- b) (1 point) What is Planned Autonomous Aggregate Expenditure in this economy?

$$AAE_p = 600 - .5(300) + 400 + 1000 + 200 = 2050$$

- c) (2 points) What is the equilibrium level of output?

$$Y = 2050/.5 = 4100$$

Part 2:

Assume now that the MPC is 0.6. Assume further that the economy reaches a new equilibrium with a new level of output.

- d) (2 points) Suppose that, in an effort to reduce the fiscal deficit, the government decides to increase the income tax rate from 0% to 20%. What is the new multiplier?

$$k = 1/(1-MPC(1-t)) = 1/(1-(0.6 * 0.8)) = 1 / 0.52 = 1.92$$

- e) (2 points) Suppose that the government also decides to increase autonomous taxes by 300. What will be the change in the level of output?

$$\Delta Y = \Delta AAEP * k = (-300 * 0.6) * 1.92 = -345.6$$

- f) (2 points) Suppose that, rather than raising taxes, the government would like obtain the same change in output as in part e. By how much will they have to reduce government expenditure?

$$\Delta G * 1.92 = -345.6 \text{ so } \Delta G = -180$$

Problem 5 (12 points)

You are given the following information:

Bank Deposits	500
Currency-to-deposits Ratio	.1
Required Reserve Ratio	0.5

- a) (2 points) Solve for the economy's monetary base (B).

$$\mathbf{B = (0.5 + 0.1) * 500 = 300}$$

- b) (2 points) Solve for the economy's bank reserves (R).

$$\mathbf{R = D * rr = 500 * 0.5 = 250}$$

- c) (2 points) Solve for the economy's money supply (M).

$$\mathbf{M = (1 + c) * D = 550}$$

- d) (3 points) Suppose that the Central Bank, deciding that the required reserve ratio is too strict, lowers it to 0.2. Assuming everything else remains unchanged, find the monetary base needed to keep the money supply fixed at the level you found in part c.

$$\mathbf{M = (1+c / c +rr) * B, \text{ so } B= 550 *(0.3 /1.1) = 150}$$

- e) (3 points) Suppose that the currency-to-deposit ratio increase to 1. Suppose also that the Central Bank believes there is a big risk of a bank crisis, and to mitigate this risk decides to increase the required reserves ratio. Find the required reserves ratio needed to keep the monetary base equal to the money supply.