

**There are 120 points on this exam, allocated as marked in parentheses after each problem. You have 3 hours.**

**Print Name** \_\_\_\_\_

**Sign Name** \_\_\_\_\_

**ID Number** \_\_\_\_\_

**Page 2** \_\_\_\_\_

**Page 3** \_\_\_\_\_

**Page 4** \_\_\_\_\_

**Page 5** \_\_\_\_\_

**Page 6** \_\_\_\_\_

**Page 7** \_\_\_\_\_

**Page 8** \_\_\_\_\_

**Page 9** \_\_\_\_\_

**TOTAL** \_\_\_\_\_

**PART I.** Write a clear **T** (for “true”) or **F** (for “false”) after each of the following statements. No explanation is required. A **correct** answer is worth **one point**, no answer at all is **zero points**, and an **incorrect** answer is **MINUS** one point. Therefore, you should guess **only** if you are reasonably confident; otherwise, it is better not to answer.

1. If Switzerland can produce 28 pounds of cheese or 80 cowbells in one day, while Austria can produce 24 pounds of cheese or 60 cowbells in one day, then Switzerland has a comparative advantage in cowbells.

**True**

2. A situation is economically efficient if you can change it so that everyone gains -- or so that some people gain while no one else loses.

**False**

3. A firm in a perfectly competitive industry chooses a quantity to produce so that marginal cost equals the price.

**True**

4. If the shoe industry is perfectly competitive and the marginal cost of producing shoes rises by one dollar per pair, then the price of a pair of shoes will rise by one dollar per pair.

**False**

5. The demand for a good increases if the price of a complement for it increases.

**False**

6. One plus the real interest rate is the relative price of future goods in terms of current goods.

**False**

7. Creditors lose and debtors gain from unexpected inflation.

**True**

8. The more elastic the supply of labor, the greater is the rise in the wage when the demand for labor increases.

**False**

9. Sellers of products would increase their profits if they would make their products fall apart or go out of style sooner (that is, if they have greater “planned obsolescence”).

**False**

10. If Nintendo and Sega game machines are substitutes, then a subsidy to the production of Nintendo machines would raise the price of Sega machines.

**False**

11. Speculators reduce economic efficiency because they buy things to resell rather than to use.

**False**

12. A \$5 tax on shoes will raise the equilibrium price of shoes by \$5.

**False**

13. If the futures price of eggs exceeds the spot price of eggs that you expect next month, you can expect to profit by buying egg futures.

**False**

14. World economic growth has been faster in the 20th century than in the 19th century, and faster in the 19th century than in earlier centuries.

**True**

15. City streets are examples of common resources, and are overused relative to the social optimum.

**True**

16. A monopoly maximizes profits by choosing to produce a quantity such that the marginal revenue minus the marginal cost is as large as possible.

**False**

17. If the rate of inflation rises, and people learn to expect this higher inflation, then the real interest rate will fall and the nominal interest rate will remain constant.

**False**

18. Automation reduces total employment in the economy.

**False**

19. A reduction in taxes on income from investment is likely to increase investment and therefore increase economic growth.

**True**

20. An increase in savings is likely to reduce long-run economic growth.

**False**

**PART II. Answer the questions.**

21. A ticket to a concert costs \$45. If you have a ticket, you can "scalp" it (sell it illegally) for \$75. To a ticket holder, what is the opportunity cost of actually attending the concert? (1) **\$75**

22. What is: (2 each)

(a) a Pareto improvement?

**A change in the economy is a Pareto improvement if at least one person gains and no one loses.**

(b) adverse selection?

**Adverse selection occurs when two people might trade with each other and one person has relevant information about some aspect of the product's quality that the other person lacks.**

(c) moral hazard?

**Moral hazard occurs when an agent lacks an incentive to act in the best interests of the principal and the principal cannot observe the actions of the agent.**

(d) a Federal Reserve open market operation?

**A Federal Reserve open market operation occurs when the Federal Reserve buys or sells bonds with money -- its changes the money supply.**

(e) a marginal tax rate?

**A marginal tax rate used the increase in taxes that you owe when you are in additional income (e.g. one more dollar).**

23. What are the formulas for

(a) the discounted present value of \$100 paid one year from now? (1)  **$\$100/(1+i)$**

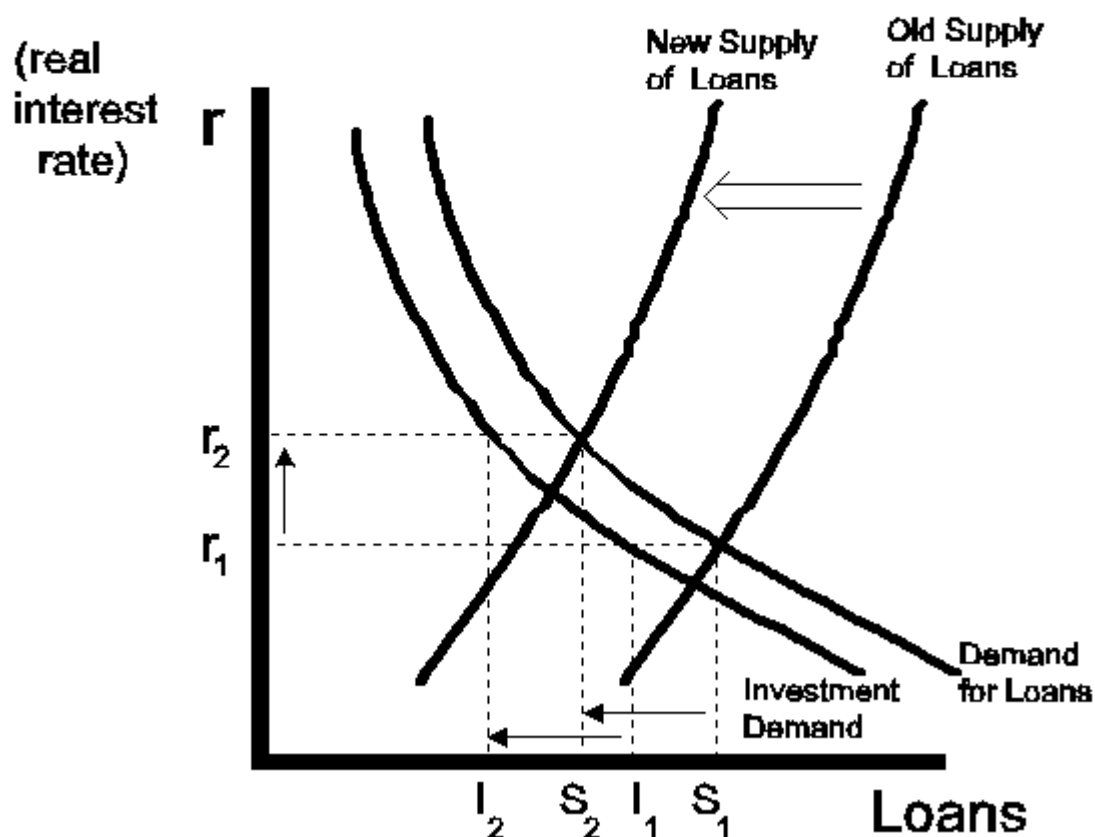
(b) the discounted present value of \$100 paid two years from now? (1)  **$\$100/(1+i)^2$**

(c) the discounted present value of \$100 paid every year forever? (1)  **$\$100/i$**

24. Define a “rise in consumer confidence” as an increased desire of consumers to spend money on consumption and decreased willingness to save. Draw a graph to show the effects of a rise in consumer confidence on the real interest rate, savings, investment, and consumption. (4)

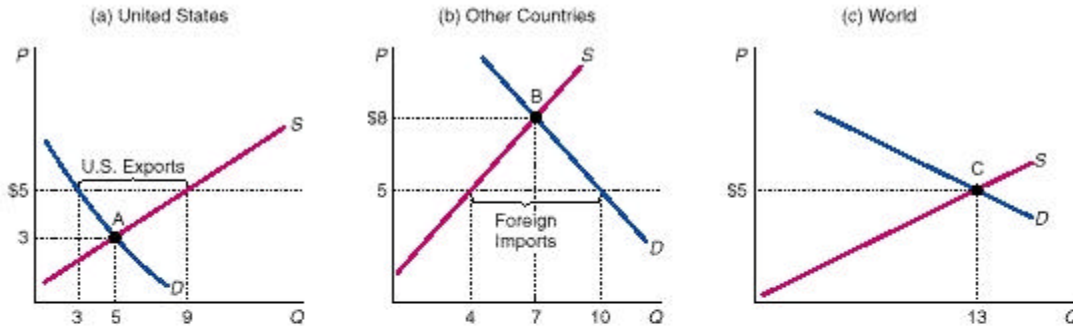
(See the graph – you do not have to draw the investment demand curve, however, just the demand for loans.)  
 The “rise in consumer confidence” lowers the supply of loans, raising the real interest rates and lowering equilibrium savings and equilibrium investment. Equilibrium consumption rises.

## A Decrease in Consumer Patience



25. Draw graphs for the following situations, and identify equilibrium prices, quantities, and other important information such as deadweight social loss (if any), for the following situations: (5 points each)  
 (a) equilibrium with international trade between 2 countries

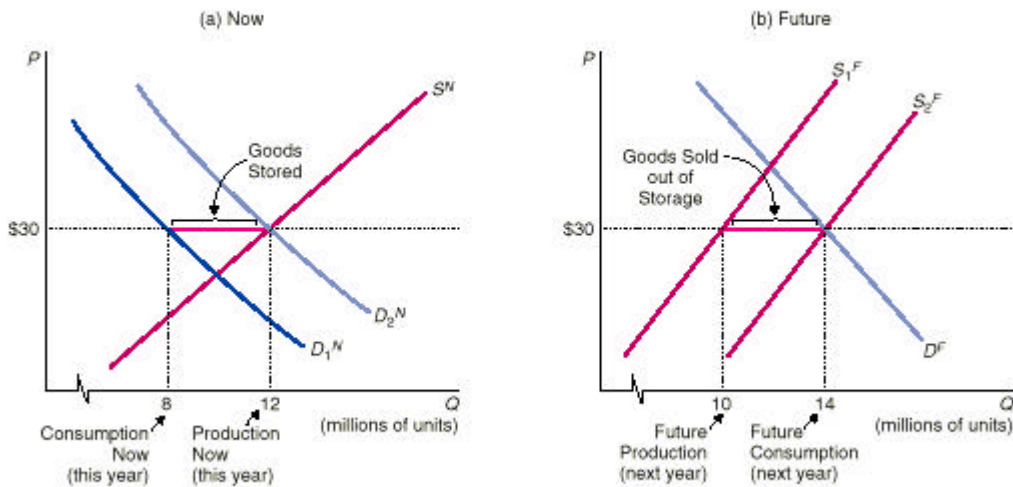
See the picture below; you do not have to draw the third graph (drawing the first two is sufficient).



Price	United States		Other Countries		World Market	
	Quantity Demanded <sup>a</sup>	Quantity Supplied <sup>a</sup>	Quantity Demanded	Quantity Supplied	Quantity Demanded	Quantity Supplied
\$9	0	17	6	8	6	25
8	0	15	7	7	7	22
7	1	13	8	6	9	19
6	2	11	9	5	11	16
World Equilibrium 5	3	9	10	4	13	13
4	4	7	11	3	15	10
3	5	5	12	2	17	7
2	6	3	13	1	19	4
1	7	1	14	0	21	1

- (b) equilibrium with speculation

**EQUILIBRIUM WITH COSTLESS SPECULATION**

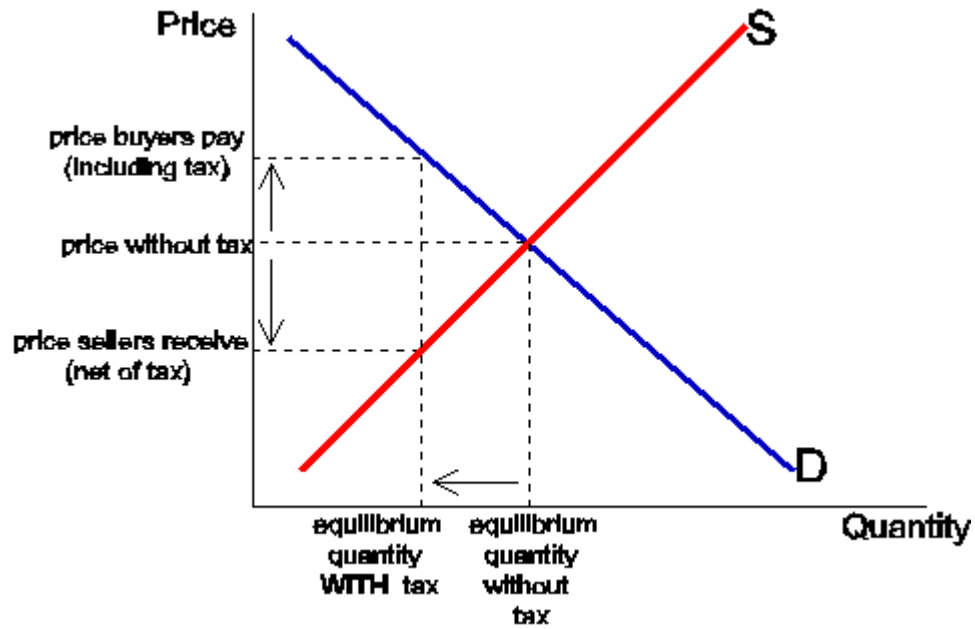


$D_1^N$  shows demand by consumers;  $D_2^N$  shows demand by both consumers and speculators.

$S_1^F$  shows supply by producers;  $S_2^F$  shows supply by both producers and speculators.

(c) equilibrium with a tax on labor income

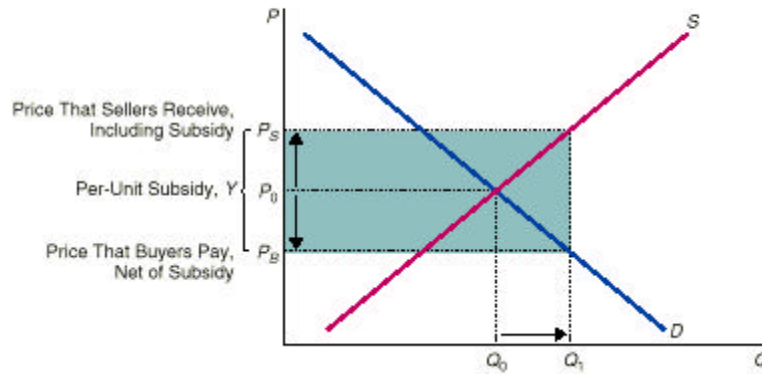
Draw a standard graph of a tax, like the graph below. The quantity now stands for labor services and the price is the wage. The equilibrium quantity is equilibrium employment.



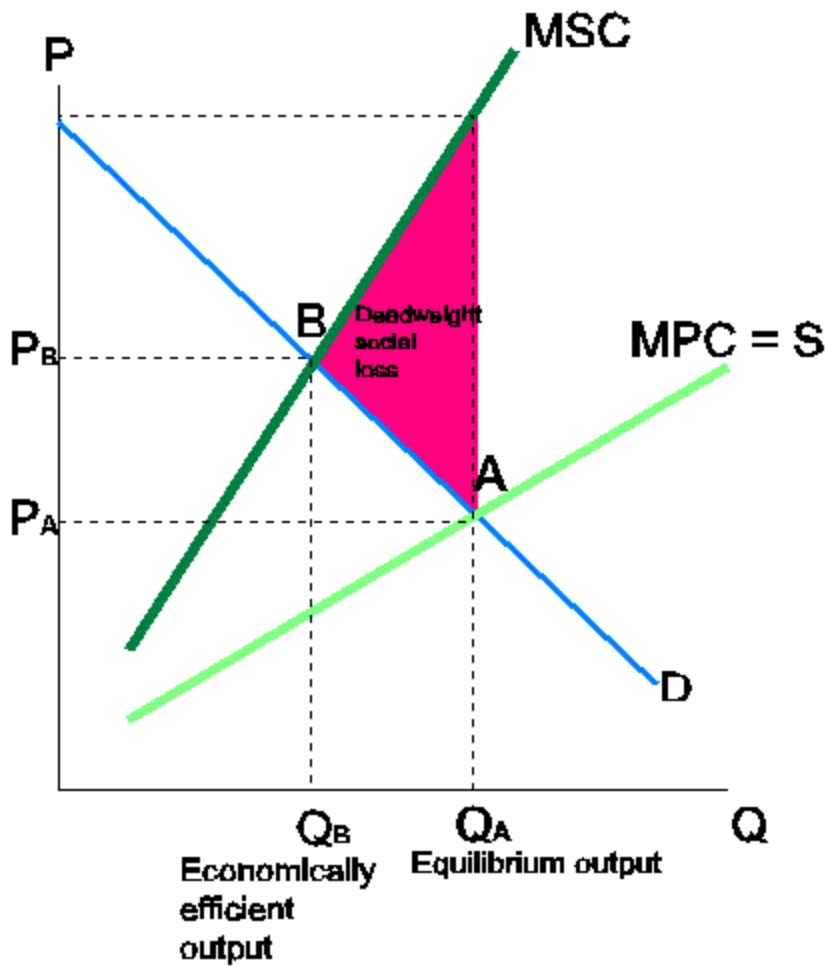
(d) equilibrium with a subsidy on output of recycled paper

**SUPPLY AND DEMAND WITH A SUBSIDY**

A subsidy creates a gap between the price that sellers receive and the price that buyers pay. The price that sellers receive, including the subsidy,  $P_S$ , exceeds the price that buyers pay,  $P_B$ , by the per-unit subsidy,  $Y$ . That is,  $P_S = P_B + Y$ . The subsidy raises the equilibrium quantity from  $Q_0$  to  $Q_1$ . The area of the shaded rectangle shows the cost of the subsidy to the government.



(e) equilibrium with a negative externality



26. Explain (a) the activist view in favor of discretionary government policies, and (b) the laissez-faire view in favor of rules for government policies. Include in your discussion an explanation of why rules can produce better results than case-by-case discretionary policy-making. (6)

**The activist view of policy maintains that the economy often operates inefficiently on its own and government macroeconomic policies can make the economy more efficient. The laissez-faire view of policy maintains that the economy usually operates efficiently on its own and that even when it does not, active government policies are more likely to aggravate inefficiencies and create new inefficiencies than to alleviate problems. Proponents of the activist view usually favor discretionary policy; proponents so the laissez-faire view usually advocate a set of rules for policy.**

**The main argument favor of the activist view is that the government should try to improve the economy's performance whenever possible. Discretionary policy is good because experts can look at current economic conditions and use their expertise to follow the best possible policies.**

**The main argument favor of the laissez-faire view is more complicated. Discretionary policies made hurt rather than help to the economy. This occurs for two main reasons.**

**(1) Lags -- there are two important kinds of lags. First, it takes time for the government to change policy -- by the time policy is changed, the reason for the policy may be gone. Second, it takes time for a change in policy to affect the economy, so by the time the policy has its effect, the reason for that policy maybe gone.**

**(2) Information -- the economy is complicated, and the government usually lacks sufficient information about current conditions (or even past conditions) to choose appropriate policies.**

**In addition, rules have benefits. Even though a policy rule may tie the hands of policymakers, preventing them from following what they considered to be the best policy on any given day, the existence of rules allows people and businesses to plan better and provides better incentives for the economy. The simplest example of the benefits of rules is the example of dealing with terrorists who of taken hostages. A policymaker following discretionary policies may choose to bargain with the terrorists for the release of the hostages. However, a policy rule saying never to deal with terrorists who take hostages can remove the incentive of terrorists to do so. In that way a policy rule can be better than discretionary policy.**

27. Explain the problems with the social security system in the U.S. (4)

**The Social Security system transfers money from working people to elderly people. Changes in demographics, mainly due to the baby boom generation, mean that Social Security now generates surpluses for the federal government, which the government uses for its current spending. This makes the official government budget deficit look smaller than it really is. When people in the baby boom generation retire, the number of retired people per working person will be significantly higher than it is today, which will require either a large tax increase on working people or a decrease in Social Security benefits. The promises that the government has made through the Social Security system mean that the government debt, often called the national debt, is much higher than is usually reported. This occurs because the official numbers on the government debt ignore the money that the government is promised to pay for the Social Security system.**

28. Discuss: "The government could reduce unemployment to almost zero by guaranteeing a government job to anyone who is unemployed -- the people could be used to clean up city streets and national parks and do other useful tasks." (NOTE: Include a discussion of how your answer depends on the way that the government pays for this program.) (6)

**This claim is false. The government can create jobs directly, but the government needs the money to pay for the programs that create jobs. Suppose the government creates a one million dollar job program, and taxes people one million dollars to pay for it. If people pay the higher taxes by spending one million dollars less on eating out restaurants, then the government destroys one million dollars worth of jobs in the restaurant industry. If people pay the higher taxes by saving one million dollars less, then investment goes down in equilibrium, destroying jobs in investment industries.**

29. Make up a numerical example of the prisoners' dilemma game. (5)

**PRISONER'S DILEMMA**

		Clyde	
		Confess	Not Confess
Bonnie	Confess	4 years each	1 year for Bonnie and 8 years for Clyde
	Not Confess	8 years for Bonnie and 1 year for Clyde	3 years each

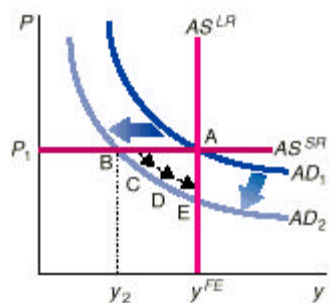
30. Explain why the effects of government spending on the economy depend partly on what goods or services the government buys. (5)

**If government spending substitutes well for private spending, as in the lunch-program example, then changes in government spending have little effect on aggregate demand. If government spending substitutes poorly for private spending, as in the statue example of the defense-spending example, then increases in government spending raise aggregate demand.**

31. Use the sticky-price theory to explain what happens, in the short run and the long run, when aggregate demand falls. (5)

In the short run, the economy moves from point A to point B in the graph – real GDP falls. In the long run, the economy moves to point E – real GDP returns to its original (full-employment) level, and the price level falls.

**SHORT-RUN AND LONG-RUN EFFECTS OF A DECREASE IN AGGREGATE DEMAND**



32. Explain why aggregate demand falls if government spending decreases. (3)

Looking at aggregate demand equals  $C+I+G+NEX$ , we see that an increase in  $G$  raises aggregate demand if  $C$ ,  $I$ , and  $NEX$  do not change. The full effects depend on how if  $C$ ,  $I$ , and  $NEX$  change. In this course, we have assumed that  $NEX$  does not change. What about  $C$  and  $I$ ? If the government decreases taxes when it decreases spending, then people have more after-tax income. If they spend all of the money from the tax cut, then  $C$  rises as much as  $G$  falls, and aggregate demand is not change. (This would happen in the lunch example, if the government stopped buying people's lunches.) However, if people save at least some of the tax cut money, then the supply of loans increases. This lowers the equilibrium interest rate and reduces the velocity of money. Even though the increase in the supply of loans raises equilibrium investment, we know that  $C+I$  rises by less than  $G$  falls -- because the fall in the velocity of money means that  $MV$  falls, so aggregate demand falls.

33. Use the table below for parts (a) and (b). (TC = total cost, MC = marginal cost, p = price, q = quantity produced and sold, TR = total revenue, MR = marginal revenue. The numbers in the table for  $q$  and  $p$  represent points on the demand curve.)

<b>q</b>	<b>p</b>	<b>TC</b>	<b>MC</b>	<b>TR</b>	<b>MR</b>	<b>profit</b>
1	20	5	5	20	20	15
2	18	11	6	36	16	25
3	16	18	7	48	12	30
4	14	26	8	56	8	30
5	12	35	9	60	4	25
6	10	45	10	60	0	15
7	8	56	11	56	-4	0
8	6	68	12	48	-8	-20

- (b) Given the information in the table, how much should a monopolist facing this demand curve and cost conditions produce? What price maximizes the monopolist's profit? (3 points)

**4 units at a price of \$14 each – because 4 units is the quantity at which  $MC=MR$**   
**(3 units at a price of \$16 each is also a correct answer.)**

- (c) What quantity would a perfectly competitive industry produce? What price would it charge? (3)

**6 units at a price of \$10 each – because 6 units is the quantity at which  $P=MC$ . In other words, this is the quantity at which the demand curve intersects the supply (marginal cost) curve.**

34. Suppose people decide to spend more money on vacations and to take this spending out of money they would otherwise have saved. Explain how this affects

(a) the real interest rate and the nominal interest rate, (2)

(b) the velocity of money, (1)

(c) aggregate demand, (1)

(d) real GDP and the price level in the short run (with sticky prices) and the long run. (2)

(f) If people spend \$10 million more on vacations, does real GDP change by more or less than \$10 million? Explain. (2)

**(a) They both rise. The fall in savings decreases the supply of loans, which raises the real interest rate. In the short run, prices are sticky, so the nominal interest rate also rises. (Part (d) below explains that prices rise in the long run, so this temporary inflation also raises the nominal interest rate.)**

**(b) Velocity rises because the nominal interest rate rises.**

**(c) Aggregate demand rises because velocity rises (so  $MV$  rises).**

**(d) Real GDP rises in the short run due to sticky prices. In the long run, the price level rises and real GDP returns to its original (full-employment) level.**

**(e) Real GDP rises by less than \$10 billion, because the fall in savings decreases the supply of loans, which lowers equilibrium investment. So  $I$  falls somewhat, meaning that  $C+I$  rises by less than \$10 billion. (Government spending and net exports do not change in this problem, so aggregate demand,  $C+I+G+NEX$ , also rises.)**

36. (a) In the article, "The Accidental Theorist," Paul Krugman describes an economy that produces only hot dogs and buns. An improvement in technology allows the economy to produce more hot dogs with fewer workers. A famous journalist sees this and argues that improvements in technology destroy jobs. What does Krugman say about this? (3)

See [The Accidental Theorist](#) (Paul Krugman in Slate).

(b) In the article of "Vulgar Keynesians," Paul Krugman discusses the claim that savings are bad for economic growth. What does Krugman say about this? (3)

See [Vulgar Keynesians -- A penny spent is not a penny earned?](#) (Paul Krugman in Slate)

(c) Discuss the economic lessons from one other assigned article that you read for this course. (3)