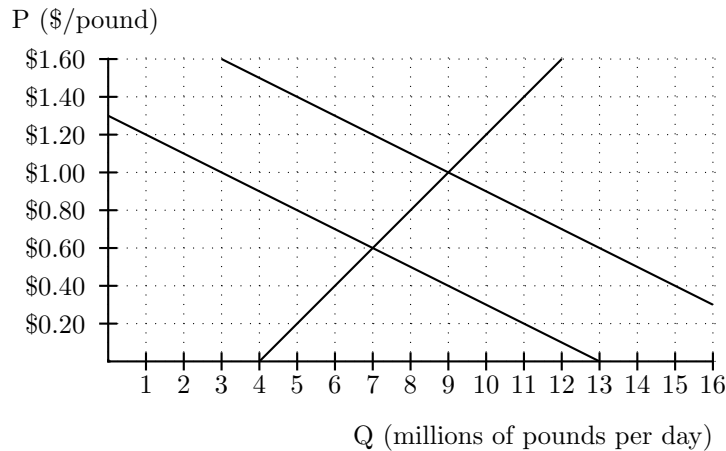


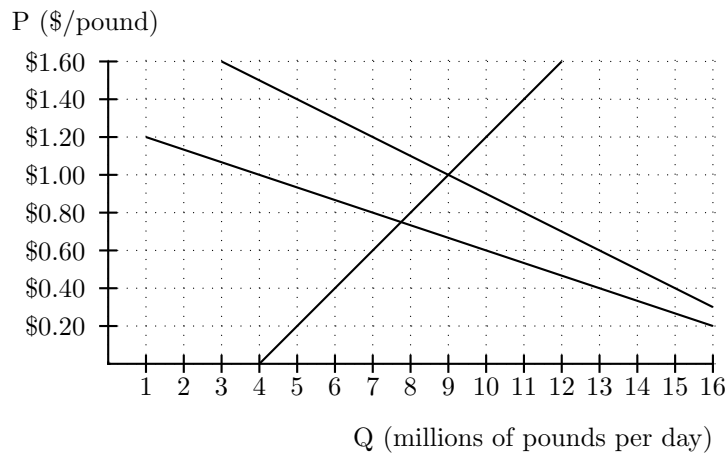
Final Exam (100 Points Total) Answer Key

1. (a) Yes: trees are capital. You need to figure out if you'll make more money investing in the trees (by letting them grow) or investing in the bank (by cutting down the trees and putting the money in the bank, where it will grow at the rate of interest).
 (b) No: the amount you spent to plant the trees is a **sunk cost**.
2. (a) There are a number of examples in the text.
 (b) Anything from the traffic problem to the pollution problem to the public-private investment game to the original prisoner's dilemma which gives the problem its name.
3. (a) Game tree here.
 (b) It is Pareto efficient. You can't make Child #2 better off without making Child #1 worse off.
4. (a) Using the annuity formula we get a present value of about \$6 trillion.
 (b) The expected damages are $\frac{1}{3}(6) + \frac{1}{3}(3) + \frac{1}{3}(0) \approx \3 trillion.
 (c) Plug \$3 trillion into the present value formula to get a present value of \$59 billion.
5. Solving the demand and supply curves simultaneously yields a market equilibrium of $p = 4$ and $q = 140$. The The tax has no impact on the demand curve, but market supply curve changes to $q = 60(.75p) - 100$.
6. Below is a hypothetical market for oranges.



Suppose that the government decides to impose a per-unit tax of \$.60 per pound on the buyers of oranges.

- (a) At a market price of, say, \$1.00, buyers have to pay an extra \$.60 in tax, so they are effectively paying \$1.60 per pound. So they should be willing to buy at a market price of \$1.00 with the tax as much as they were willing to buy at a market price of \$1.60 without the tax. Another approach: the marginal benefit curve shifts down by \$.60 because the marginal benefit of each unit is reduced by that amount by the tax.
- (b) The demand curve rotates downward as shown. At a price of \$.40 per pound, for example, buyers would effectively be paying \$.60 per pound, so at a price of \$.40 with a 50% tax they should be willing to buy as much as they were willing to buy at a price of \$.60 per pound without the tax.



7. The statement is true: the radio purchase increases C by \$20. But it also increases imports (Im) by \$20, so GDP (Y) remains unchanged, as do the other components of GDP.
8. (a) In a free market, the outcome is a price of \$10 per hour and a quantity of 5 million workers. With a minimum wage of \$14 per hour, the outcome is a price of \$14 per hour and a quantity of 3 million workers.
- (b) The amount of labor that buyers want to buy at \$10 per hour is equal to the amount of labor that sellers want to sell at \$10 per hour. At any price above \$10 per hour, sellers will want to sell more than buyers want to buy, which will create individual incentives that will push the market price down towards the equilibrium. At any price below \$10 per hour, buyers will want to buy more than sellers want to

sell, which will create individual incentives that will push the market price up towards the equilibrium.

- (c) At a price of \$14 per hour, 7 million workers want employment but only 3 million jobs are available. The minimum wage therefore increases unemployment by 4 million workers.
9. (a) The Fed's actions increase the money supply, which causes the equilibrium interest rate to fall. The y axis measures the interest rate, and the x axis measures the amount of money that is demanded or supplied.
- (b) The aggregate demand curve shifts out, meaning that in the short run, the Fed's action increases the price level and real GDP in short run.
- (c) There is no effect on long-run real GDP because that is determined by real variables like population growth and technological change, not by nominal variables like the money supply. In other words, the long-run AS curve is vertical, meaning that real GDP is the same regardless of the price level. So in the long run, the Fed's action leads to inflation (a higher price level) but does not affect real GDP.
10. At some market price p^* (say, \$2 per shirt) firms in the dry-cleaning business earn the market rate of return; in the long run, then, firms are indifferent between the dry-cleaning business and other types of businesses, so they are willing to supply an arbitrary amount of dry-cleaning at \$2 per shirt. At any price less than \$2 per shirt, firms would earn less than the market rate of return; in the long run, then, no firms would be willing to dry-clean shirts, meaning that quantity supplied would be zero at any price less than \$2 per shirt. Similarly, at any market price greater than \$2 per shirt, firms in the dry-cleaning business would earn more than the market rate of return; in the long run, then, everybody would rush into the dry-cleaning business, meaning that the quantity supplied would be infinite at any price greater than \$2.