TEST 1 VERSION A
"Demand and Supply"

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

I. Problems: Insert your answer to each question below in the box provided. Feel free to use the margins for scratch work—only the answers in the boxes will be graded.

(1) [Intro to antitrust: 8 pts] Identify each statement below as either *normative* or *positive*.

   a. Market power causes prices to rise.

   b. Prices should be set at the competitive level.

   c. Government policy should try to maximize consumer and producer surplus.

   d. Markets converge to prices where quantity demanded equals quantity
      supplied.

(2) [Intro to antitrust: 8 pts] Fill in the blanks: Antitrust policy is enforced by two U.S. federal agencies:

the _____ Division of the _____ Department,

and the _____ _____ Commission.

(3) [Demand and supply, simultaneous equations: 20 pts] Suppose demand and supply for jump drives are given by the following equations.
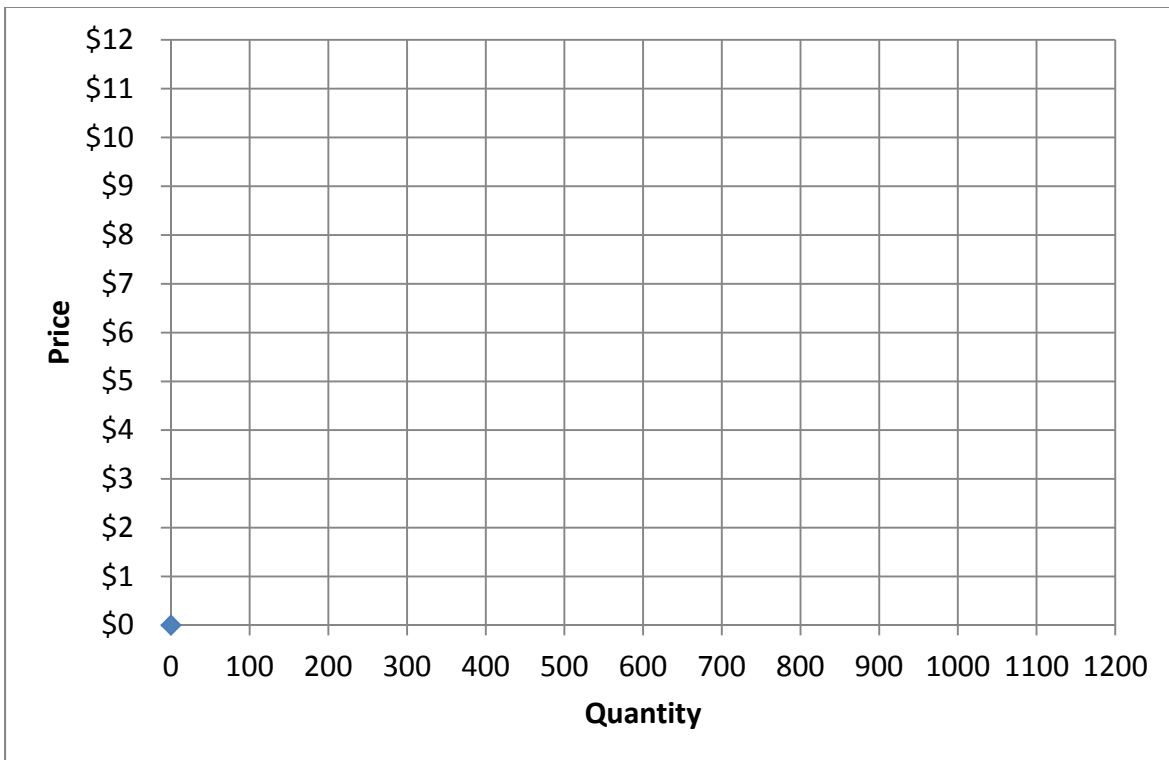
$$\text{Demand: } P = 10 - (Q/100) \qquad \text{Supply: } P = 1 + (Q/200)$$

a. [10 pts] Solve for the market equilibrium price (P*) and quantity (Q*) for jump drives. Show your work and circle your final answers.

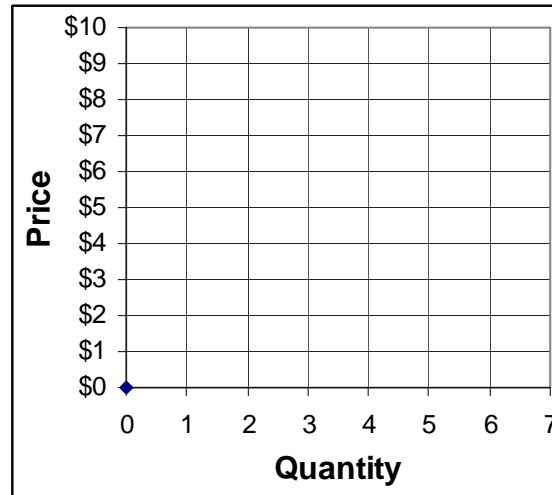b. [2 pts] Compute total revenue for sellers (which equals total spending for buyers).

$

c. [8 pts] Graph and label the demand and supply curves below, using a straightedge.

(4) [Equilibrium: 16 pts] Suppose three buyers and three sellers engage in a market similar to the activity we did in class. Each buyer may buy at most two units and each seller may sell at most two units, but no one is forced to trade. Assume that buyers and sellers are each trying to maximize their personal surplus (or "gains from trade"). Surplus for each buyer equals the buyer's value of the good minus the price paid. Surplus for each seller equals the price received minus the seller's cost of the good. Surplus of persons who do not trade is zero. Prices must be whole dollars. Buyers' values and sellers' costs are given in the following table. Please use the graph at right for scratch work.

	Buyers' values		
	A	B	C
1st unit	$10	$9	$7
2nd unit	$2	$4	$6

	Sellers' costs		
	#1	#2	#3
1st unit	$1	$2	$3
2nd unit	$10	$9	$4

a. Suppose the price were **$9**. Would there be *excess demand or excess supply*?

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 total spending by buyers).

$

(5) [Price elasticity of demand: 8 pts] For each demand equation below, find a numerical or algebraic expression for the price elasticity of demand. Circle your final answer.

a. $Q = 25\,P^{-1/2}$.

b. $Q = 100 - 0.1\,P$.

(6) [Price elasticity of demand: 8 pts] Consider the graph below of a demand curve.

Price ↑   Demand
|═══════════════════════
|
|
|_____→
                 Quantity
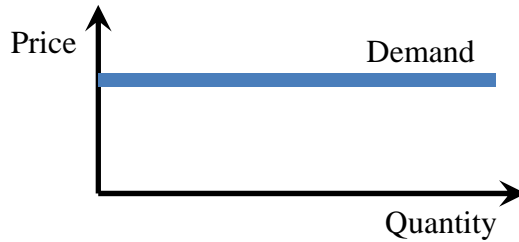
    a. Is demand *elastic, inelastic, perfectly elastic, perfectly inelastic*, or *unit elastic* ?

    b. What is the price elasticity of demand? (Give a number.)

(7) [Price elasticity of demand: 8 pts] Suppose that when the price of gasoline increases by 5 percent, the quantity of gasoline purchased decreases by 2 percent. Assume nothing else related to the demand for gasoline changes.

    a. Compute the price elasticity of demand for gasoline.

    b. Is demand *elastic, inelastic,* or *unitary-elastic* ?

    c. Will spending on gasoline *increase,* or *decrease*?

    d. ... by about how much?   %

(8) [Price elasticity of demand: 10 pts] Suppose the electric utility lowers its rates by 5%. Assume the elasticity of demand for electricity is –1.2.   Assume everything else affecting demand for electricity remains constant.

    a. Will electricity consumption *increase or decrease?*

    b. ... by about how much?   %

    c. Will revenue received by the electric utility *increase* or *decrease?*

    d. ... by about how much?   %

    e. Is the demand for electricity *elastic, inelastic,* or *unitary elastic?*
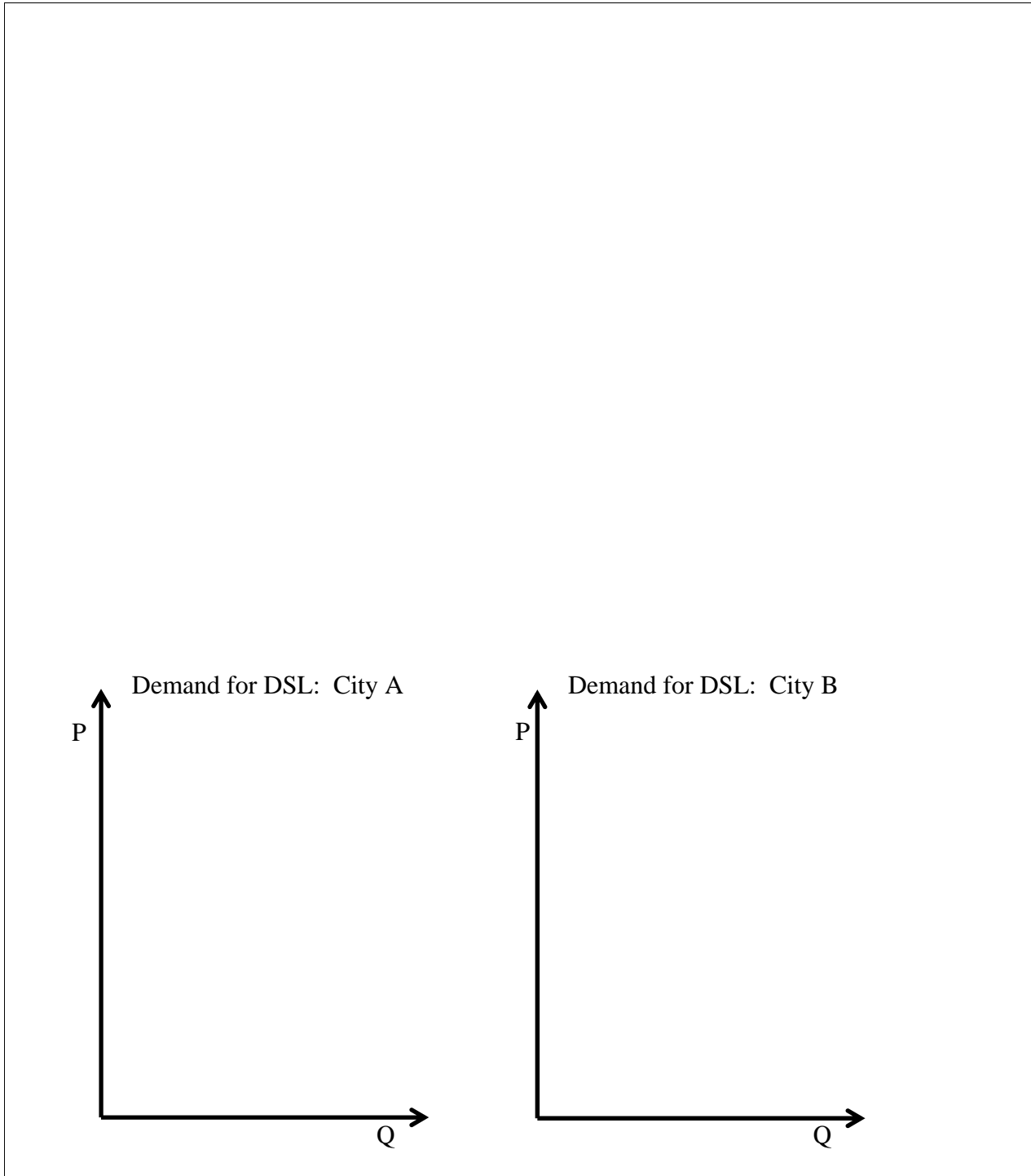
(9) [Price elasticity of supply: 8 pts] Suppose the government wants to increase the number military personnel by 12% (without lowering quality standards). Also suppose the elasticity of supply into the military is known to be 2.0.

    a. To increase military personnel by this much, must military pay levels *increase or decrease*?

    b. ... by about how much?   %

    c. Will the total military payroll (the amount in dollars budgeted to pay military personnel) *increase or decrease*?

    d. ... by about how much?   %

II. Critical thinking: Write a one-paragraph essay answering the question below. [6 pts]

In city A, high-speed internet access can be obtained through DSL lines provided by the telephone company, or through cable lines provided by the cable TV company. In city B, high-speed internet access can be obtained only through DSL lines. In which city is the demand for DSL lines *more* elastic? Why? Illustrate your answer with sketches of two curves representing the demand for DSL lines in the two cities.

Demand for DSL: City A

P

Q

Demand for DSL: City B

P

Q

[end of quiz]