Econ 100B: Principles of Economics NAME: _____

Problem set 8, due Wednesday 5/13/2015

1. Comparative advantage. Jack and Kate are stranded on an island. Jack can find 5 mangoes per day or kill 1 boar per day; Kate can find 10 mangoes per day, or kill 1 boar per day, as shown by the table on the left and below:

units per day

	mangoes	boar
Jack	5	1
Kate	10	1

opportunity cost

	mangoes	boar
Jack	_____ boar	_____ mangoes
Kate	_____ boar	_____ mangoes

a) Fill in the blanks on the opportunity cost table, to show how many of each good each person must give up to get one of the other good, without trade.

b) a comparative advantage in _____ (boar, mangoes, both, neither)

c) _____ has a comparative advantage in wine. _____ has a comparative advantage in swords.

d) If _____ (Jack, Kate) gives _____ (Jack, Kate) a boar for any number of mangoes between _____ and _____, both can potentially be made better off.

2. Comparative advantage again. Andre and Arnold can divide their time between making bread and making wine. The units per day table below shows how many of each good (bread, wine) Andre and Arnold can produce per day.

units per day

	bread	Wine
Andre	8	4
Arnold	6	2

opportunity cost

	bread	wine
Andre	_____ wines	_____ breads
Arnold	_____ wines	_____ breads

a) Fill in the blanks on the opportunity cost table, to show how many of each good each person must give up to get one of the other good, without trade.

b) Andre has a comparative advantage in making _____ (bread, wine, both, neither)

c) If _____ (Andre, Arnold) gives _____ (Andre, Arnold) a loaf of bread for any number of bottles of wine between _____ and _____, then both can potentially be made better off.

3. Supply and demand, with trade. Suppose that domestic demand and supply of bananas in Stansylvania can be represented by the following marginal benefit and marginal cost functions: $MB = 100 - q$, and $MC = 20 + q$ (where q gives the quantity of bananas consumed or produced). Stansylvania is such a small country that it can have no measurable effect on the worldwide market price of bananas, which is 30.

a) Find Stansylvania's equilibrium quantity, price, consumer surplus, producer surplus, and total economic surplus if its government allows no imports at all.

$q =$ _____ $p =$ _____ $CS =$ _____ $PS =$ _____ $TES =$ _____

b) Find Stansylvania's equilibrium quantity demanded, quantity supplied, quantity imported, consumer surplus, producer surplus, and total economic surplus if its government allows bananas to be imported without restriction.

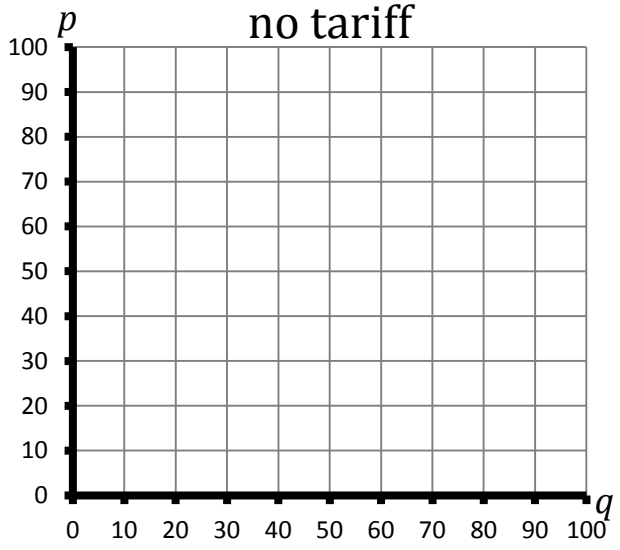
$q_d =$ _____ $q_s =$ _____ $q_i =$ _____ $CS =$ _____ $PS =$ _____ $TES =$ _____

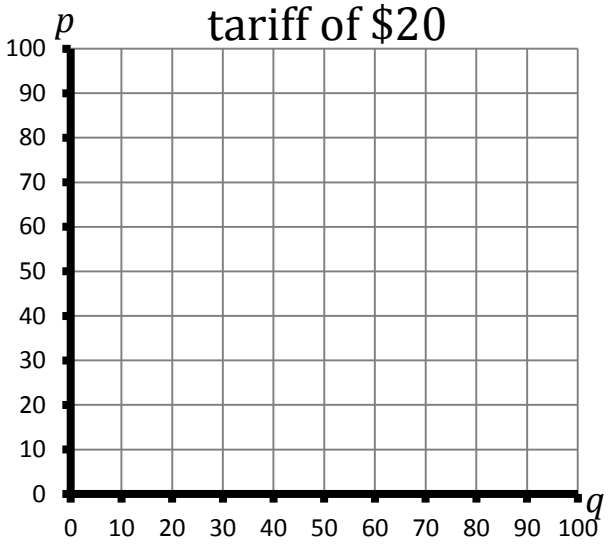
c) Find Stansylvania's equilibrium quantity demanded, quantity supplied, quantity imported, consumer surplus, producer surplus, government revenue, and total economic surplus (including government revenue) if its government imposes an import tariff of 20 per unit.

$q_d =$ _____ $q_s =$ _____ $q_i =$ _____ $CS =$ _____ $PS =$ _____ $GR =$ _____ $TES =$ _____

d) What is the deadweight loss of the tariff in part c? _____

e) On both graphs below, draw marginal benefit, marginal cost, and world price. On the first graph, use different shading to indicate consumer surplus and producer surplus. On the second graph, use different shading to indicate consumer surplus, producer surplus, government revenue, and deadweight loss.





4. Firm entry and exit. Suppose that every firm in a particular industry (which is perfectly competitive) has the cost function $C(q) = 10q + \frac{1}{120}q^2 + 3000$, and thus the marginal cost function $MC(q) = 10 + \frac{1}{60}q$, where q is the quantity of output it produces. Market demand is given by the function $Q_d(p) = 10800 - 360p$. Let n be the number of firms.

a) Find the supply function of each firm, $q_s(p)$, and use this to find the market supply function, $Q_s(p) = n \cdot q_s(p)$.

For parts b-d, suppose that in the short run there are 4 firms in the industry.

b) The short run market equilibrium price is _____. At this price, each firm produces $q =$ _____ units, and all the firms together produce $Q =$ _____ units.

c) Each firm has revenue $R =$ _____, cost $C =$ _____, and profit $\pi =$ _____.

d) Do firms want to enter or exit?

In parts e-g, we consider the long run equilibrium, in which firms do not want to enter or exit.

e) Find each firm's average cost function, $AC(q)$.

f) In the long run equilibrium, the price is $\tilde{p} =$ _____, and each firm will produce $\tilde{q} =$ _____ units of output.

g) Therefore, the number of firms in the long run equilibrium is $n^* =$ _____.