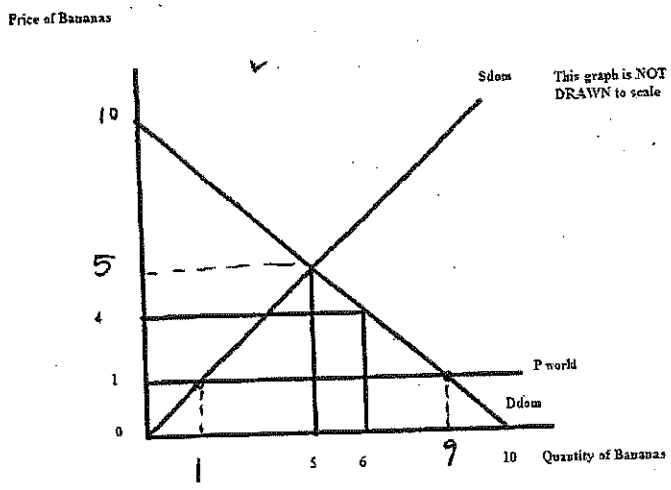
Economics 100
Spring 2015
Answers to Quiz #3

Name Annotated Key

In answering this question refer to the figure below. The figure depicts the market for bananas in a small, closed economy. The figure also provides the world price of bananas, $1. Assume that both the demand and the supply curves are linear in this market.



a. (1 point) Given the above figure, write an equation for the domestic demand curve, Ddom. Show your work.

slope of D curve: $-\frac{4}{4} = -1$

y-intercept must be 10 in order for slope of D curve to be -1

$\boxed{P = 10 - Q}$

$(Q, P) = (6, 4)$ and $(10, 0)$ are on D curve $\Rightarrow$ slope $= \frac{\text{rise}}{\text{run}} = \frac{4}{-4} = -1$

b. (1. point) Given the above figure, write an equation for the domestic supply curve, Sdom. Show youar work.

from D curve: if $Q = 5$, then $P = 5$. $(Q, P) = (5, 5)$ is on both the D & S curves.

So S curve: $P = Q$ since slope of supply curve is $\frac{\text{rise}}{\text{run}} = \frac{5}{5} = 1$

$\boxed{P = Q}$

c. (1 . point) Given the above figure, if this market for bananas opens to trade, what is the value of consumer surplus, CSopen? Show your work.

When $P = 1$, then $Q^D \Rightarrow P = 10 - Q^D \Rightarrow 1 = 10 - Q^D \Rightarrow Q^D = 9$

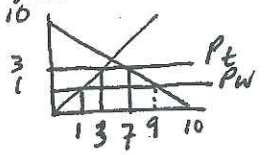
$CS_{open} = \frac{1}{2}(10 - 1)(9) = \frac{1}{2}(9)(9) = \frac{81}{2} = \$40.50$

d. (1/ point) Given the above figure, if this market for bananas opens to trade, what is the value of ~~consumer~~ producer surplus, PSopen? Show your work.

When $P = 1$, then $Q^S \Rightarrow P = Q^S \Rightarrow 1 = Q^S$

$PS_{open} = \frac{1}{2}(1 - 0)(1) = \$.50$

e. (1/ : point) Suppose the market for bananas opens to trade, but a tariff is placed on bananas so that the price of the bananas with the tariff is now $3. How many bananas will be imported with this tariff? Show your work.



When $P_t = 3 \Rightarrow Q^D = 7$, $Q^S = 3$

Imports w/ tariff = $Q^D_{tariff} - Q^S_{tariff}$ = 7 − 3 = 4 units of bananas

f. (1. point) Given the tariff described in (e), what is the value of consumer surplus with the tariff, CStariff? Show your work.

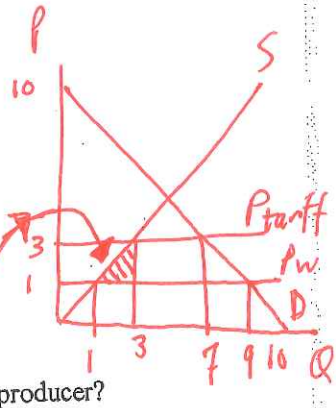
$CS_{tariff} = \frac{1}{2}(10-3)(7) = \frac{49}{2} = \$24.50$

g. (1. point) Given the tariff described in (e), what is the value of producer surplus with the tariff, PStariff? Show your work.

$PS_{tariff} = \frac{1}{2}(3-0)(3) = \$4.50$

h. (1/_ point) Given the tariff described in (e), what is the value of government tariff revenue with the tariff, Govt. Tariff Rev.? Show your work.

Govt tariff Rev = $(P_t - P_w)$(# of Imports w/ Tariff)
= (3 − 1)(4) = 2(4) = \$8



i. (1/ point) What is the value of total surplus with the tariff, TSsurplus? Show your work.

$TS_{tariff} = PS_{tariff} + CS_{tariff} + \text{Govt tariff rev}$
= 4.50 + 24.50 + 8
= \$37

j. (1/_ point) What is the value of the deadweight loss due to using a less efficient, higher cost producer? Show your work.

$DWL = \frac{1}{2}(3-1)(3-1) + \frac{1}{2}(3-1)(9-7)$
$= \frac{1}{2}(2)(2) + \frac{1}{2}(2)(2)$
$= 2 + 2$
$= \$4$

DWL due to using less efficient, higher cost producer = $\frac{1}{2}$(\$3/unit − \$1/unit)(2 units) = \$2.00

Note: $TS_{tariff} + DWL = TS_{open}$ [a way of verifying your calculations] 2