



EE 211 Principles of Microeconomics

Online Quiz #2 (A)

Instructions (Please read carefully.)

1. Each of you will receive the quiz question from your email (via google classroom), but I will give you a password to open the file at 9:30 am so that everyone starts the quiz at the same time.
2. You can either write your answers on papers and take pictures of your answers, or write them using a tablet. In either case, you need to save all pages in ONE single pdf-file and name your file in the following format: Firstname_studentID_quiz2A.pdf. For instance, Phatta_640464xxxxx_quiz2A.pdf.
3. You have 25 minutes to complete your quiz, and you will have 10 minutes for taking pictures, save the file, and upload the file to google classroom. That is, you need to upload your answers BEFORE 10:05 am.
4. While taking your quiz, please turn on your video camera but mute your microphone. Do not consult with other students or any other source. This is the honor system, and I believe in your integrity.
5. In the case that you have any technical problems (e.g. internet connection problem), which results in a submission delay, please capture your screen or take a picture of error messages for a proof. 6. If you fail to submit your quiz in time (without any proof of technical problems), you will receive zero score for that quiz.
6. You may use a simple calculator.

Suppose that the demand and supply curves of an agricultural product are given by the following equations.

$$\text{Demand: } P = \frac{40}{3} - \frac{1}{3}Q_D$$

$$\text{Supply: } P = -4 + Q_S$$

1. (4 points) Determine the equilibrium price and quantity.

$$\text{At eqm, } Q_D^* = Q_S^* = Q^*$$

$$\Rightarrow P^* = \frac{40}{3} - \frac{1}{3}Q^* = -4 + Q^*$$

$$40 - Q^* = -12 + 3Q^*$$

$$52 = 4Q^*$$

$$Q^* = 13 \quad (2)$$

$$P^* = 9 \quad (2)$$

2. (8 points) At the equilibrium point found in question 1, determine:

- (i) the price elasticity of demand,
(ii) the price elasticity of supply.

$$\text{Demand: } P = \frac{40}{3} - \frac{1}{3}Q_D$$

$$\frac{\Delta P}{\Delta Q_D} = -\frac{1}{3} \Rightarrow \frac{\Delta Q_D}{\Delta P} = -3$$

$$\epsilon_d = \frac{\% \Delta Q_D}{\% \Delta P} = \frac{\Delta Q_D / Q_D}{\Delta P / P}$$

$$\text{At eqm, } \epsilon_d = \frac{\Delta Q_D}{\Delta P} \cdot \frac{P^*}{Q^*} = (-3) \times \frac{9}{13}$$

$$\therefore \epsilon_d = -\frac{27}{13} \quad (4)$$

$$\text{Supply: } P = -4 + Q_S$$

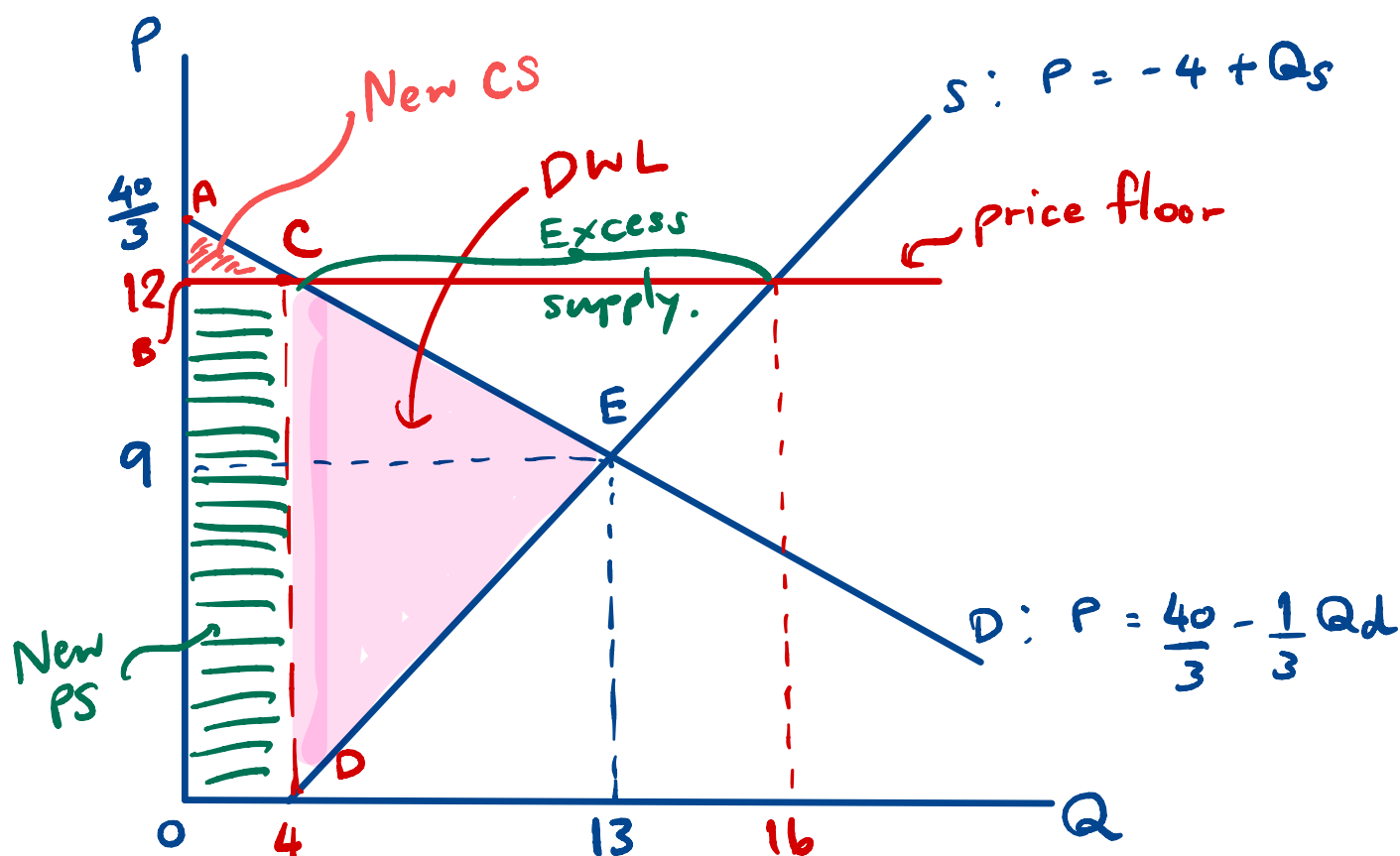
$$\frac{\Delta P}{\Delta Q_S} = 1 \Rightarrow \frac{\Delta Q_S}{\Delta P} = 1$$

$$\epsilon_s = \frac{\% \Delta Q_S}{\% \Delta P} = \frac{\Delta Q_S / Q_S}{\Delta P / P}$$

$$\text{At eqm, } \epsilon_s = \frac{\Delta Q_S}{\Delta P} \cdot \frac{P^*}{Q^*} = (1) \times \frac{9}{13}$$

$$\therefore \epsilon_s = \frac{9}{13} \quad (4)$$

3. (8 points) Suppose a price floor is fixed at $P = \$12$. Draw a diagram to illustrate the change in the market equilibrium.
- Is there an excess demand or excess supply at this price floor, and how much?
 - Indicate the areas of new consumer surplus and new producer surplus after the price floor is imposed. Is there a deadweight loss to the society? [Note: No need for calculation in part (ii).]



- (i) At $\bar{P} = 12$, $Q_s^{PF} = 16$ and $Q_d^{PF} = 4$
 $\Rightarrow$ Excess supply : $ES = Q_s - Q_d = 12$ (2)
- (ii) New CS = Area (ABC) ; New PS = Area (BCD0) } (6)
 DWL = Area (CDE)