

# Worked w/ River Passed solution review

2. At the current market equilibrium, the price of a good equals \$40 and the quantity equals 10 units. At this equilibrium, the price elasticity of supply is 2.0. Assume that the supply curve is linear.
- Use the price elasticity and market equilibrium to find the supply curve. (Hint: the supply curve has the following form:  $q = a + (\Delta q / \Delta p)p$ . First, find the value of  $\Delta q / \Delta p$ ; then, find the value of  $a$ .)
  - Calculate the producer surplus in the market.
  - Imagine that a policy results in the price falling from \$40 to \$34. By how much does producer surplus fall?
  - What fraction of the lost producer surplus is due to the reduction in the quantity supplied and what fraction is due to the fall in price received per unit sold?

$$a) \epsilon = \frac{\Delta q}{\Delta p} \cdot \frac{p}{q} \rightarrow 2 = \frac{\Delta q}{\Delta p} \cdot \frac{40}{10} \rightarrow 2 = \frac{\Delta q}{\Delta p} \cdot 4 \rightarrow \frac{\Delta q}{\Delta p} = .5$$

$$q = a + .5p \rightarrow 10 = a + .5(40) \rightarrow 10 = a + 20 \rightarrow a = -10$$

$$\text{Supply schedule: } q = -10 + .5p$$

$$b) q = -10 + .5p \rightarrow .5p = 10 + q \rightarrow p = 20 + 2q$$

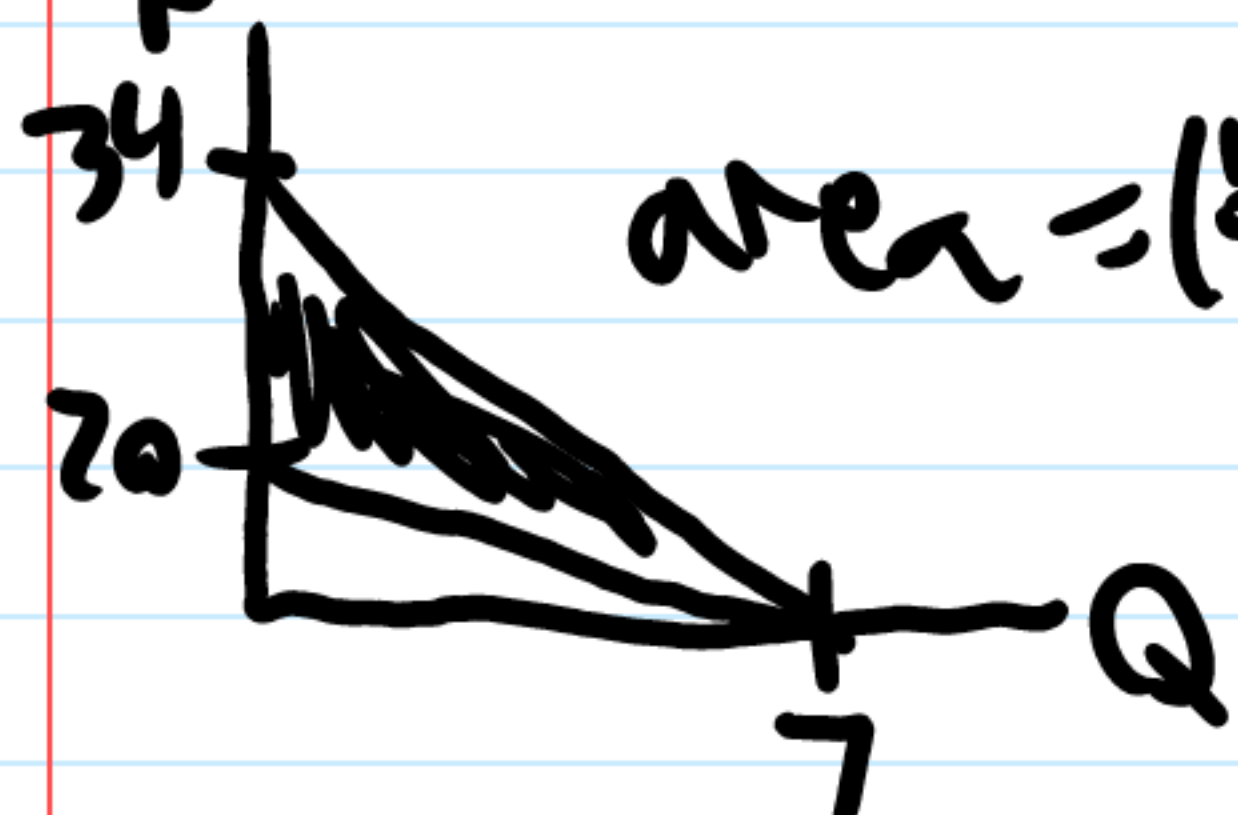
$$\text{area} = \frac{1}{2}bh \rightarrow (\frac{1}{2})(20)(10) = 100$$



$$c) q = -10 + .5(34) \rightarrow q = -10 + 17 \rightarrow q = 7$$

$$\text{area} = (\frac{1}{2})bh \rightarrow (\frac{1}{2})(14)(7) = 49$$

$$100 - 49 = 51$$



$$d) PS = (6 \cdot 7) + (\frac{1}{2})(6)(7)$$

$$PS = 42 + 21$$

$$PS = 63$$



$$\text{Price loss due to } q: 21/63 = 1/3$$

$$\text{Price loss due to } p: 42/63 = 2/3$$