# AGBE 321, Fall 2015

## Quiz 1, Grading Rubric

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### Question 1

**Part (a)**

- The response had fewer than 2 spelling/grammar mistakes / 1
- The reasoning for a positive supply shift was clearly explained; for example, the supply shift was driven by improved milking technology. / 4

**Part (b)**

- Downward sloping demand curve / upward sloping supply curve / 1
- Correct labels: $P$ on vertical axis; $Q$ on horizontal axis; Initial equilibrium quantity, $Q_0$; Initial equilibrium price, $P_0$ / 2
- Supply shift outward / 3
- No change to demand curve / 2
- Correct labels for new equilibrium price, $P_1$, and new equilibrium quantity, $Q_1$ / 2

**Part (c)**

- The response had fewer than 2 spelling/grammar mistakes / 1
- The reasoning for a negative demand shift was clearly explained; for example, the demand shift was driven by the fact that robots are a substitute for labor / 4

**Part (d)**

- Downward sloping demand curve / upward sloping supply curve / 1
- Correct labels: $P$ on vertical axis; $Q$ on horizontal axis; Initial equilibrium quantity, $Q_0$; Initial equilibrium price, $P_0$ / 2
- Demand shift inward / 3
- No change to supply curve / 2
- Correct labels for new equilibrium price, $P_1$, and new equilibrium quantity, $Q_1$ / 2

### Question 2

- Input demand and supply functions correctly converted to inverse demand/supply form / 2
- Milk inverse supply function is correctly calculated using the “old” labor function ($P_S = -3850 + 16.25Q$) / 3
Milk inverse supply function is set equal to the milk inverse demand function.
Equilibrium quantity is determined by solving for $Q^* = 238$.
Equilibrium price is determined by solving for $P^* = $23 using the determined equilibrium quantity, $Q^*$.
Milk inverse supply function is correctly calculated using the “new” labor function ($P_s = -3950 + 16.5Q$).
Milk inverse supply function is set equal to the milk inverse demand function.
Equilibrium quantity is determined by solving for $Q^* = 240$.
Equilibrium price is determined by solving for $P^* = $20 using the determined equilibrium quantity, $Q^*$.
Calculated the percent change in quantity, $\%\Delta Q \approx 0.9\%$.
Calculated the percent change in price, $\%\Delta P \approx -18\%$.

Question 3
Converted the inverse demand function into demand and calculated the new demand as: $Q_{D}^{\text{new}} = 0.85 \times Q_{D}^{\text{old}}$.
Converted the new demand into inverse demand, $P_D = 50 - 2.35Q$.
Input labor supply function correctly converted to inverse supply form.
Labor inverse supply function is set equal to the labor inverse demand function.
Equilibrium quantity is determined by solving for $Q^* = 15.8$.
Equilibrium price is determined by solving for $P^* = $12.90 using the determined equilibrium quantity, $Q^*$.

Question 4
The response had fewer than 2 spelling/grammar mistakes.
The increase, decrease, or no change in the alfalfa hay market must be justified using economic terminology and, if a change in the market is noted, the connection between the robotic milking technology and the alfalfa hay market must be clearly identified.