

Homework 1

Question 2.2: Filter the table to only include the quantity to be less than 2000. Then, make a scatter plot. Please give a title to the graph, x-axis, and y-axis.

```
In [ ]: nondelta_below_2000 = ...  
...
```

```
In [ ]: grader.check("q2_2")
```

Question 2.6: Find the market equilibrium.

```
In [ ]: plot_equation(..., 0, 6000)  
plot_equation(..., 0, 6000)  
plt.ylim(0,175)  
plt.title("Non-Delta Supply and Demand")  
plt.xlabel("Quantity")  
plt.ylabel("Price")  
plot_intercept(...)
```

Question 2.7: Visually compare the market equilibrium between Delta and non-Delta flights. Explain in 2-4 sentences why there was or was not a change.

```
In [ ]: delta_demand = -0.035 * Q + 189 # from lab  
delta_supply = 0.03 * Q + 14 # from lab  
Q_star_delta = solve(delta_demand, delta_supply)  
delta_demand.subs(Q, Q_star_delta)  
delta_supply.subs(Q, Q_star_delta)  
  
plot_equation(nondelta_demand, 1250, 5000, label = "Non-Delta Flight  
s")  
plot_equation(nondelta_supply, 1250, 5000)  
plt.ylim(30,160)  
plt.title("Delta vs Non-Delta Airlines Equilibrium")  
plt.xlabel("Quantity")  
plt.ylabel("Price")  
plot_intercept(nondelta_supply, nondelta_demand)  
plot_equation(delta_demand, 1250, 5000, label = "Delta Flights")  
plot_equation(delta_supply, 1250, 5000)  
  
plt.legend(loc = "upper right")  
plt.show()
```

Type your answer here, replacing this text.

Question 3.9: Visualize the market equilibrium.

```
In [ ]: plot_equation(..., 0, 2000)
plot_equation(..., 0, 2000)
plt.ylim(0,250)
plt.title("Low Price Airfare Supply and Demand")
plt.xlabel("Quantity")
plt.ylabel("Price")
plot_intercept(...)
```

Question 3.10: Visualize the market equilibrium for all flights with fewer than 2000 weekly passengers (from lecture) and that of low priced airlines. You should end up with a graph with 1 supply curve and 2 demand curves (1 for all airlines and 1 for low priced airlines). In 2-4 sentences, interpret what this graph means and why there is or is not a difference between the two market equilibriums. Suppose the demand function for all flights is as follows:

```
In [ ]: airline_demand = -0.026 * Q + 178.5
airline_demand
```

```
In [ ]: Q_star_allairlines = solve(airline_demand, lowprice_supply)
airline_demand.subs(Q, Q_star_allairlines)
```

```
In [ ]: plot_equation(airline_demand, 0, 6000, "All Airlines")
plot_equation(lowprice_demand, 0, 6000, "Low Price Airlines")
plot_equation(lowprice_supply, 0, 6000)
plt.ylim(0,300)
plt.title("All Airlines vs Low Price Airlines")
plt.xlabel("Quantity")
plt.ylabel("Price")
plt.legend()
plot_intercept(lowprice_supply, lowprice_demand)
```

Type your answer here, replacing this text.