Elements of Macroeconomics TA Session 3: Assignment 2

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Slides on https://github.com/Haruki-Shibuya/TA

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Q1 (a)

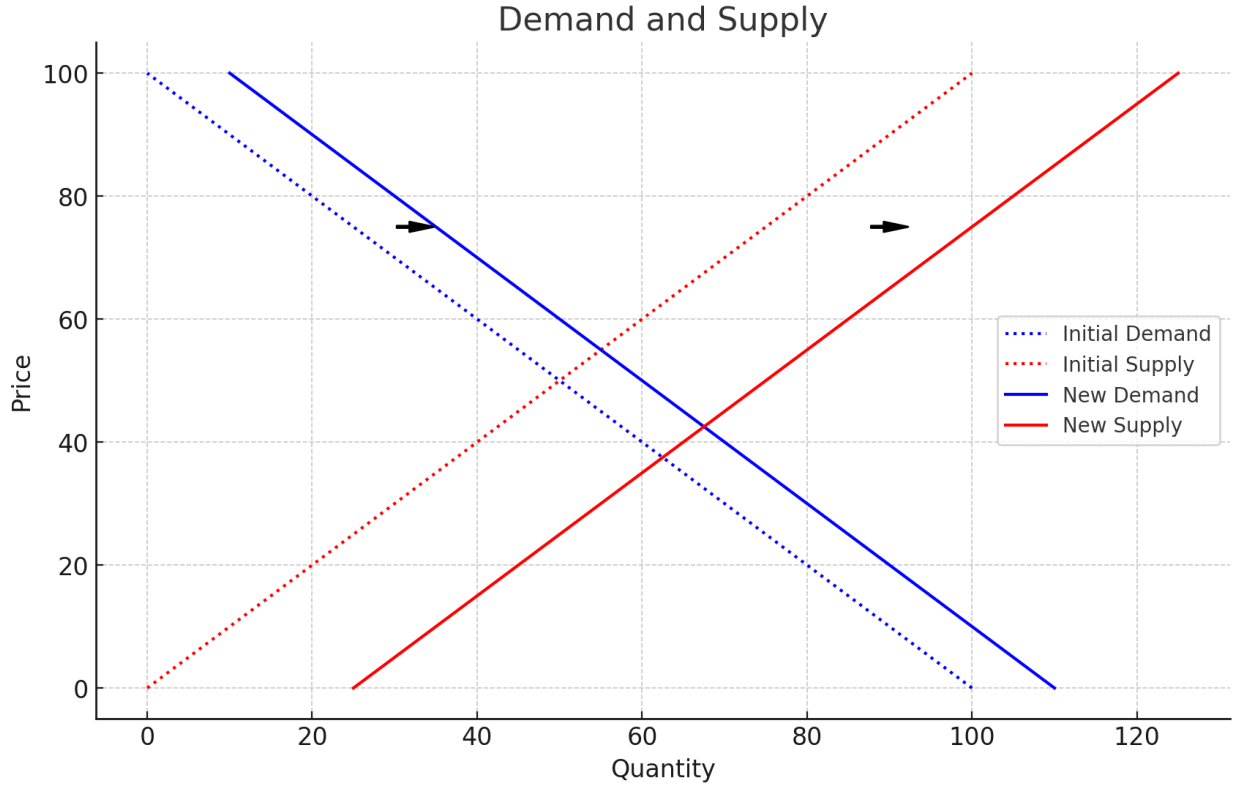
- Using supply and demand, explain the change in price in each of the following cases

- Q1(a)

a) Lobster prices usually fall during the summer peak harvest season, despite the fact that people like to eat lobster during the summer months more than during any other time of year.

Q1 (a)

If people like to eat lobster during the summer months more than during any other time of year, it means the demand increases in the summer. The summer peak harvest means supply increases too. If both demand and supply increase, the price will fall if the increase in supply is greater than the increase in demand.



Q1 (b)

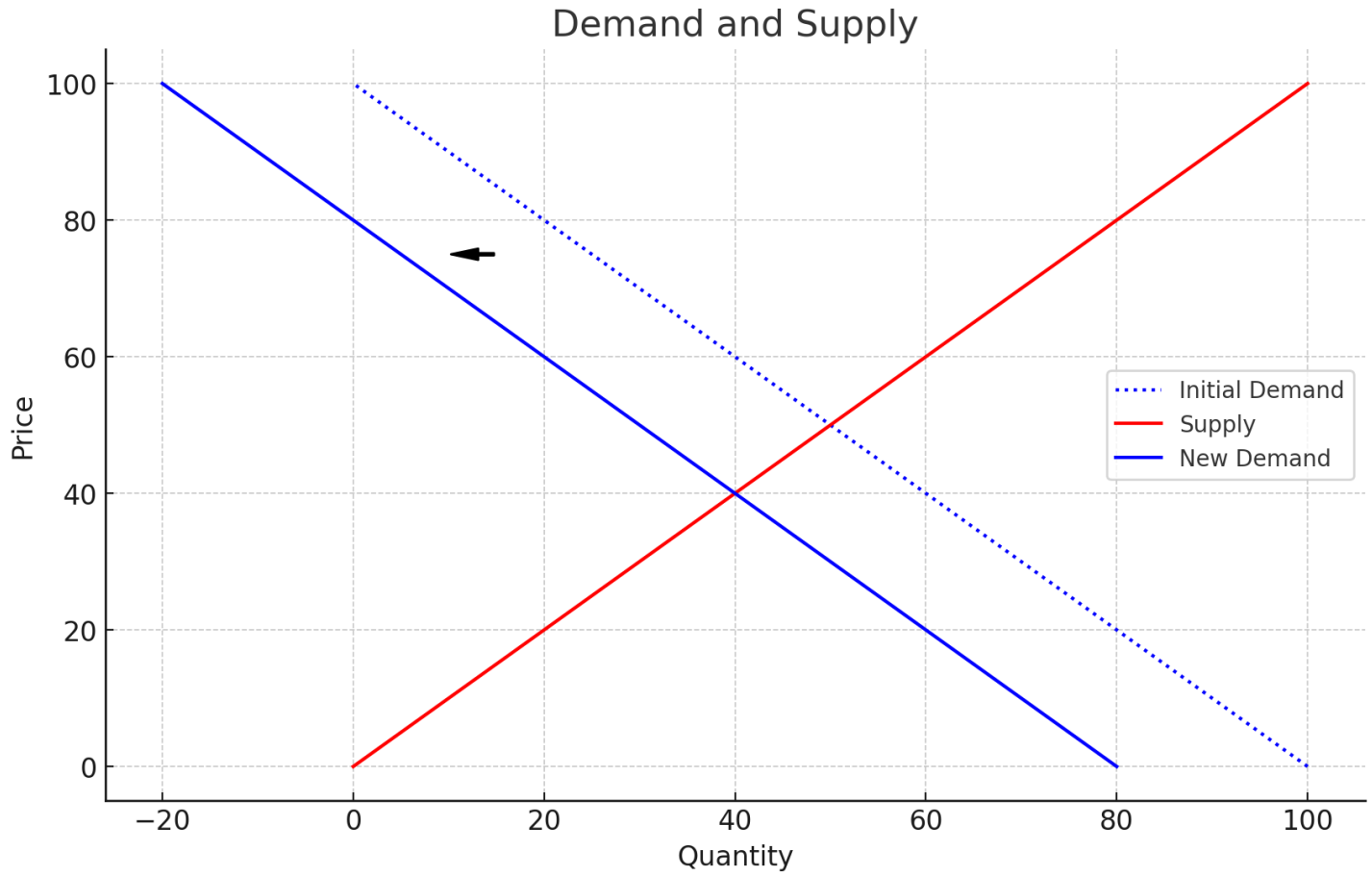
- Using supply and demand, explain the change in price in each of the following cases

- Q1(b)

b) The price of a Christmas tree is lower after Christmas than before, and fewer trees are sold.

Q1 (b)

Demand falls after Christmas.



Q1 (c)

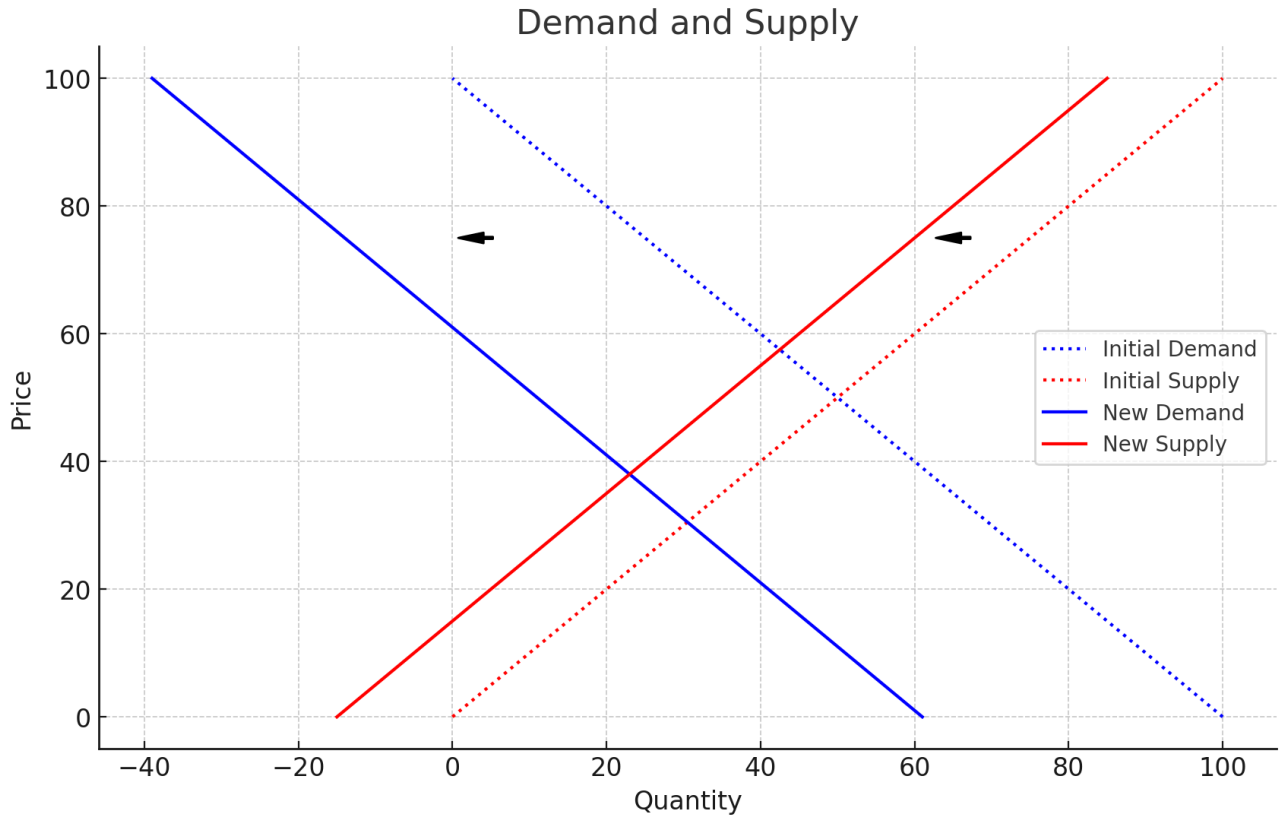
- Using supply and demand, explain the change in price in each of the following cases

- Q1(c)

c) The price of a round-trip ticket to Paris on Air France falls by more than $200 after the end of school vacation in September. This happens despite the fact that generally worsening weather increases the cost of operating flights to Paris, and Air France therefore reduces the number of flights to Paris at any given price.

Q1 (c)

Supply falls due to the rising cost of operating flights to Paris, demand for vacation falls after the end of school vacation. Price of Air France tickets fall because the decrease in demand is greater than the decrease in supply.



Q2(a)

Question Two

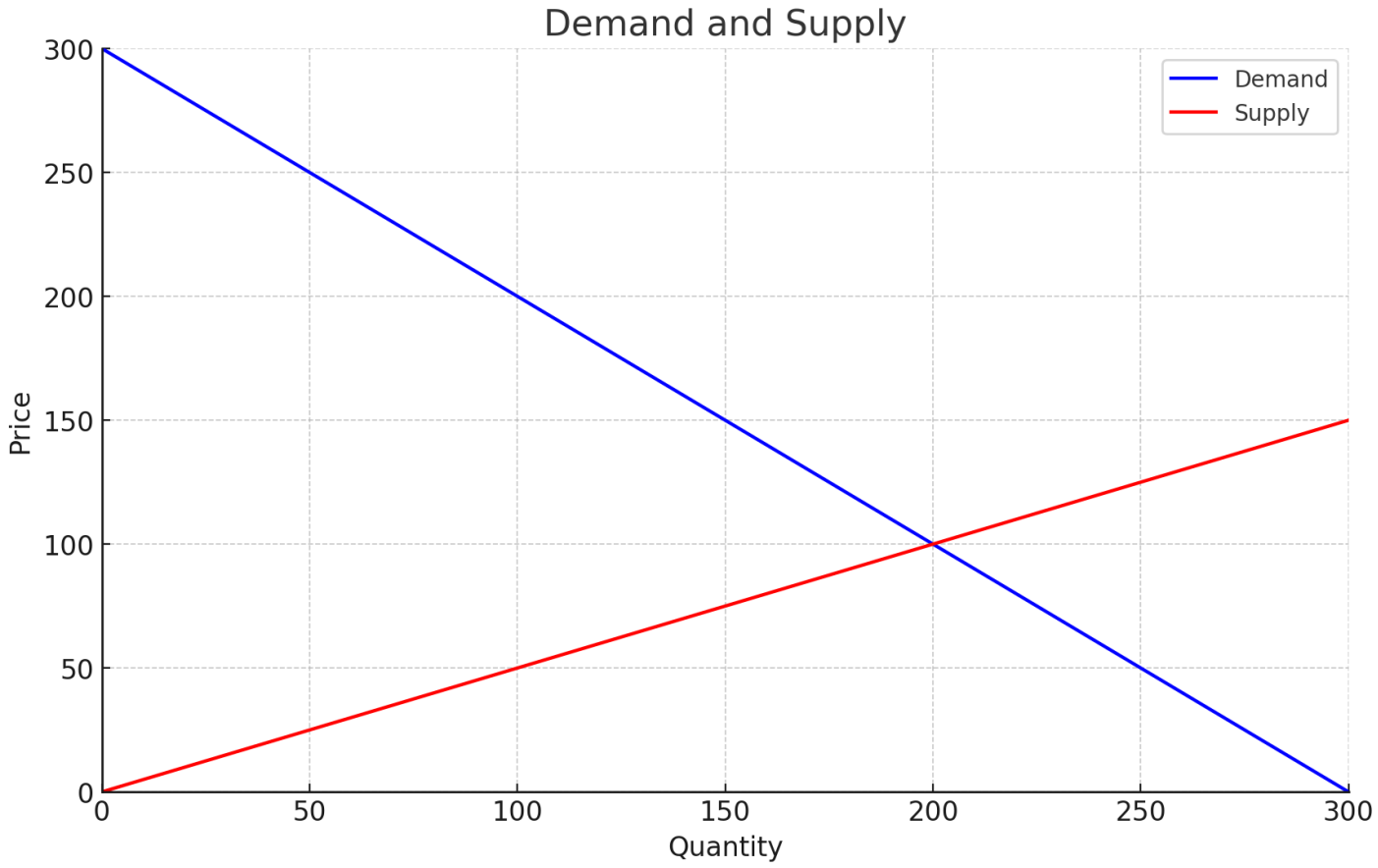
A market is described by the following supply and demand curves:

$Q_S = 2P$

$Q_D = 300 - P$

a) Solve for the equilibrium price and quantity.

Q2(a)



$Qs = Qd$ at equilibrium

$2P = 300 - P$

$3P = 300$

$P = 100$

Plug in P to either supply or demand equation:

$Qs = 2(100)$

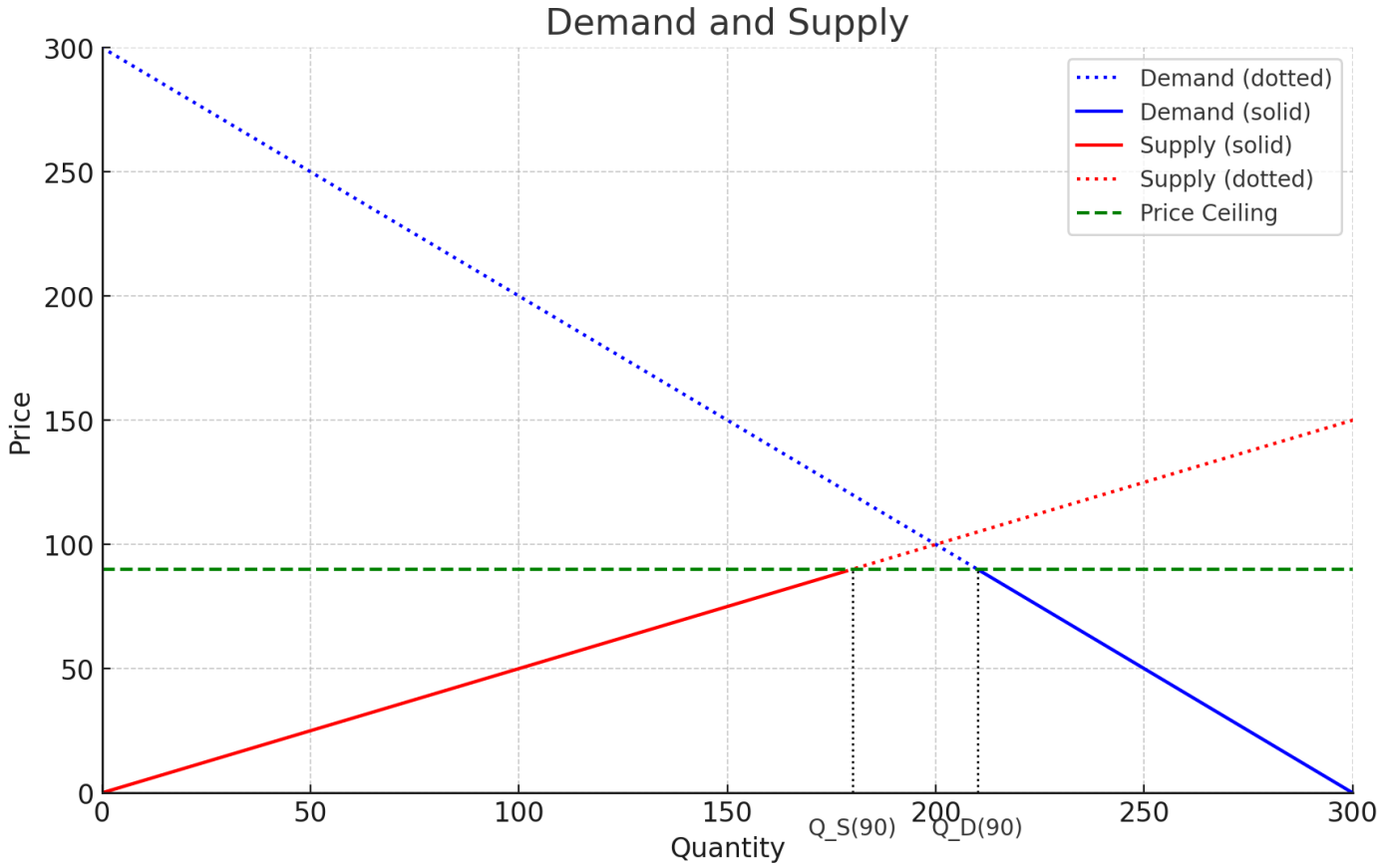
$Q = 200$

Q2(b)

b) If the government imposes a price ceiling of $90, does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus? (5 pts)

Q2(b)

Quantity demanded is greater than quantity supplied. There is a **shortage.**
Price is $90.



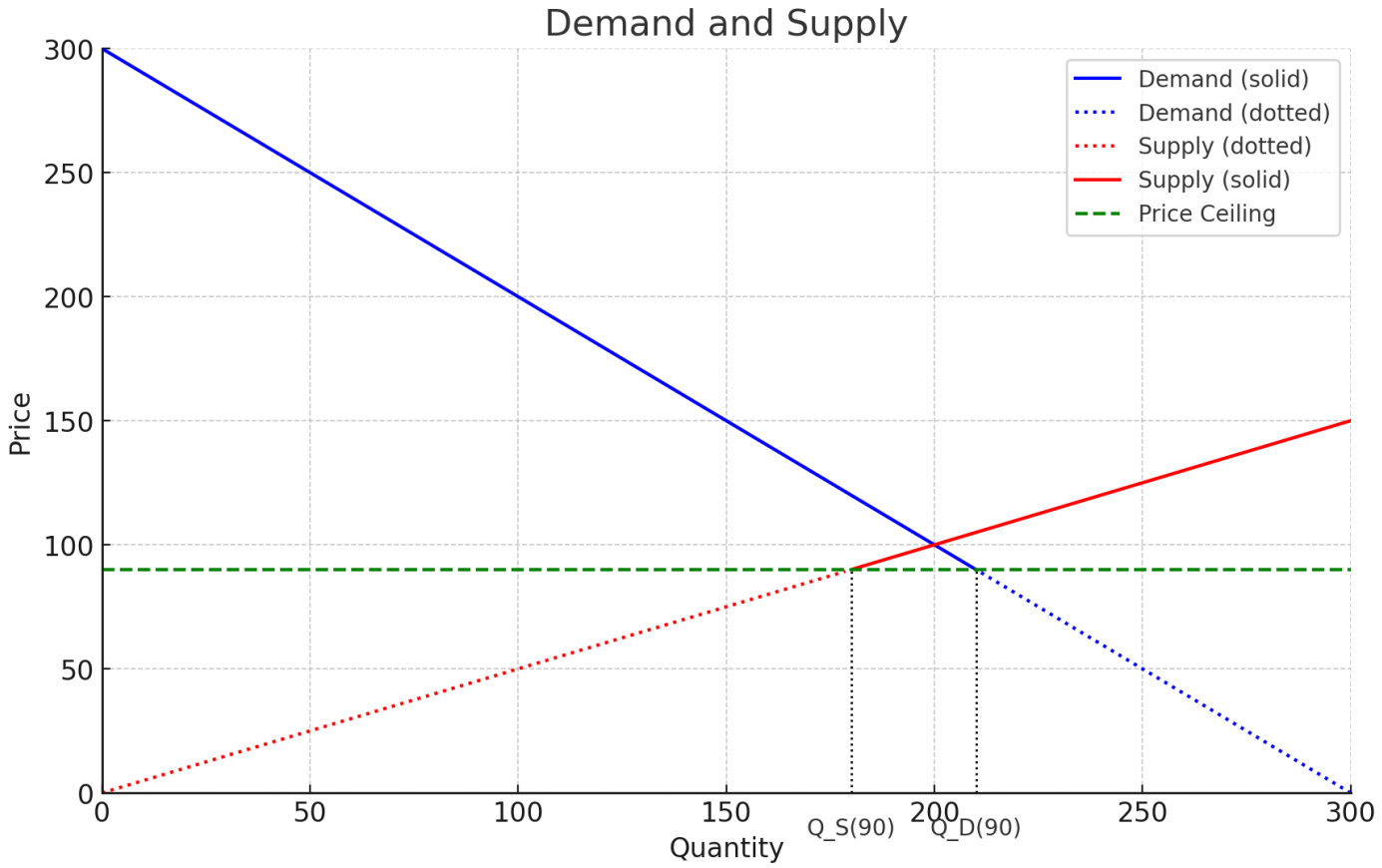
$Qd = 300 - P = 300 - 90 = \mathbf{210}$
$Qs = 2P = 2(90) = \mathbf{180}$
Size of shortage $= 210 - 180 = \mathbf{30}$

Q2(c)

c) If the government imposes a price floor of $90, does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus? (5 pts)

Q2(c)

No shortage nor surplus; same as original equilibrium



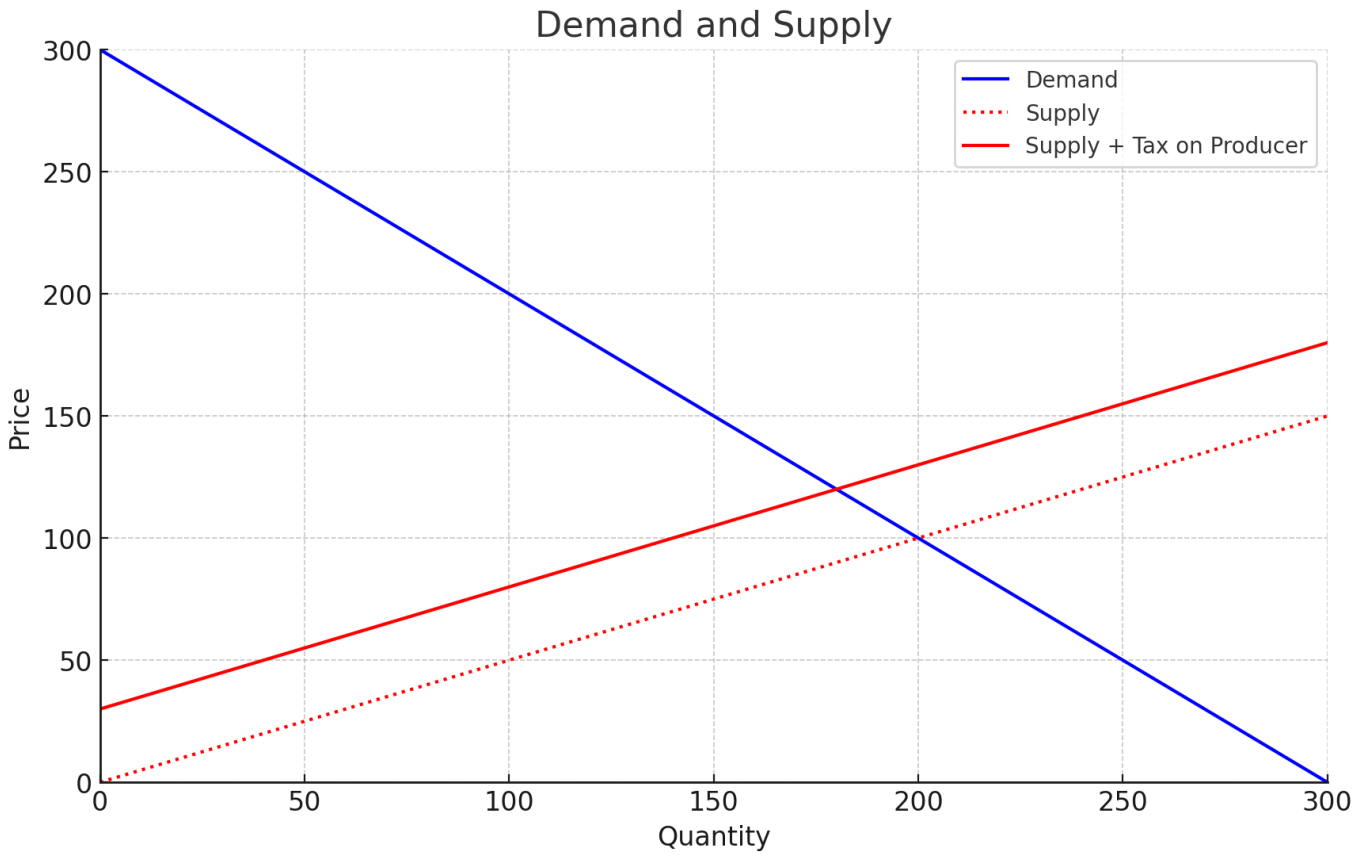
P = 100
Qs = Qd = 200
Shortage/surplus = 0

Q2(d)

d) Instead of a price control, the government levies a tax on producers of $30. As a result, the new supply curve is: $Q_S = 2(P - 30)$.
Does a shortage or surplus (or neither) develop? What are the price, quantity supplied, quantity demanded, and size of the shortage or surplus? (5 pts)

Q2(d)

No shortage or surplus



$2P - 60 = 300 - P$
$3P = 360$

P = $120
Plugging P into new supply curve to find Q:
$Qs = Qd = 2(120) - 60 = 240 - 60 = \mathbf{180}$

Q3(a)

Question Three

Demand and supply often shift in the retail market for gasoline. Here are two demand schedules and two supply schedules for gallons of gasoline in the month of May in a small town in Maine. Some of the data are missing.

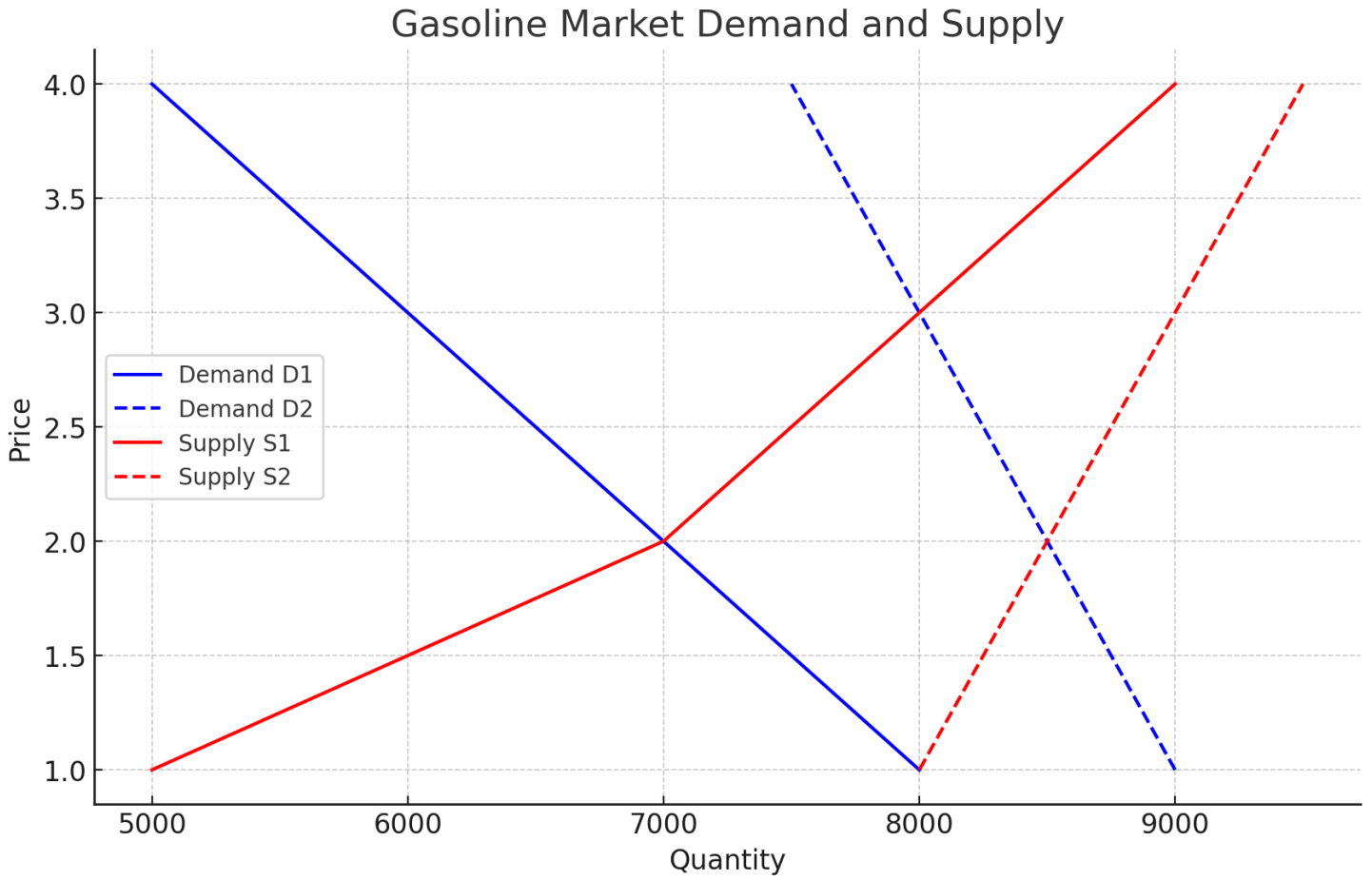
a) Use the following facts to fill in the missing data in the table. If demand is D_1 and supply is S_1, the equilibrium quantity is 7000 gallons per month. When demand is D_2 and supply is S_1, the equilibrium price is \$3.00 per gallon. When demand is D_2 and supply is S_1, there is an excess demand of 4000 gallons per month at a price of \$1.00 per gallon. If demand is D_1 and supply is S_2, the equilibrium quantity is 8000 gallons per month.

Q3(a)

a) Use the following facts to fill in the missing data in the table. If demand is D_1 and supply is S_1, the equilibrium quantity is 7000 gallons per month. When demand is D_2 and supply is S_1, the equilibrium price is \$3.00 per gallon. When demand is D_2 and supply is S_1, there is an excess demand of 4000 gallons per month at a price of \$1.00 per gallon. If demand is D_1 and supply is S_2, the equilibrium quantity is 8000 gallons per month.

	Quantity Demanded		Quantity supplied	
Price	D_1	D_2	S_1	S_2
\$4.00	5000	7500	9000	9500
3.00	6000	8000	8000	9000
2.00	7000	8500	7000	8500
1.00	8000	9000	5000	8000

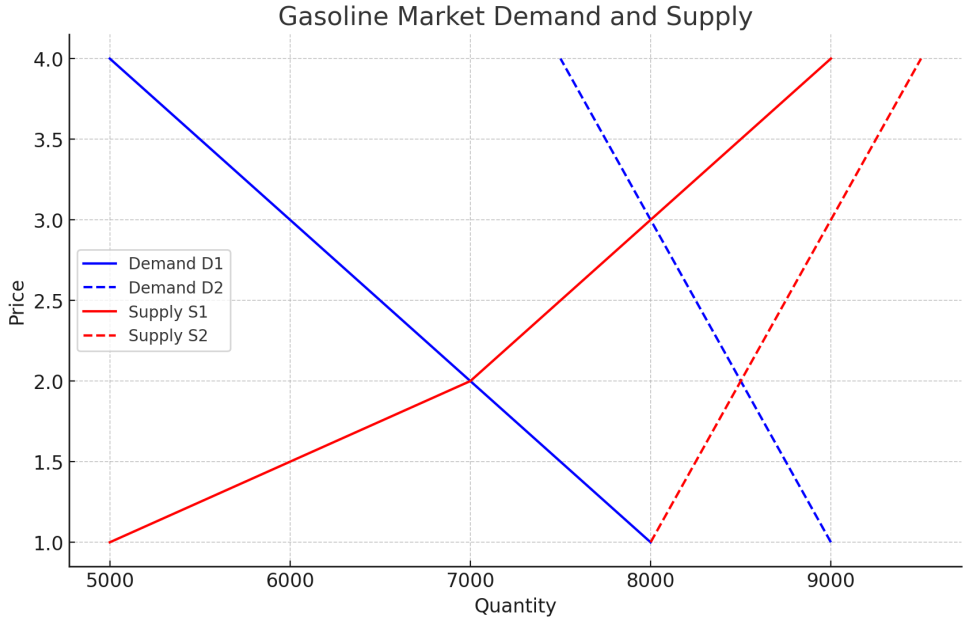
Q3(a)


Gasoline Market Demand and Supply
Price
Quantity
4.0
3.5
3.0
2.5
2.0
1.5
1.0
5000
6000
7000
8000
9000
Demand D1
Demand D2
Supply S1
Supply S2

Q3(b)

b) Compare two equilibriums. In the first, demand is D_1, and supply is S_1. In the second, demand is D_1, and supply is S_2. By how much does the equilibrium quantity change? By how much does the equilibrium price change?

At D_1S_1 equilibrium is price = \$2 quantity= 7000 gallons per month
At D_1S_2 equilibrium is price = \$1 quantity= 8000 gallons per month
Quantity increased by 1000 gallons per month, price decreased by \$1

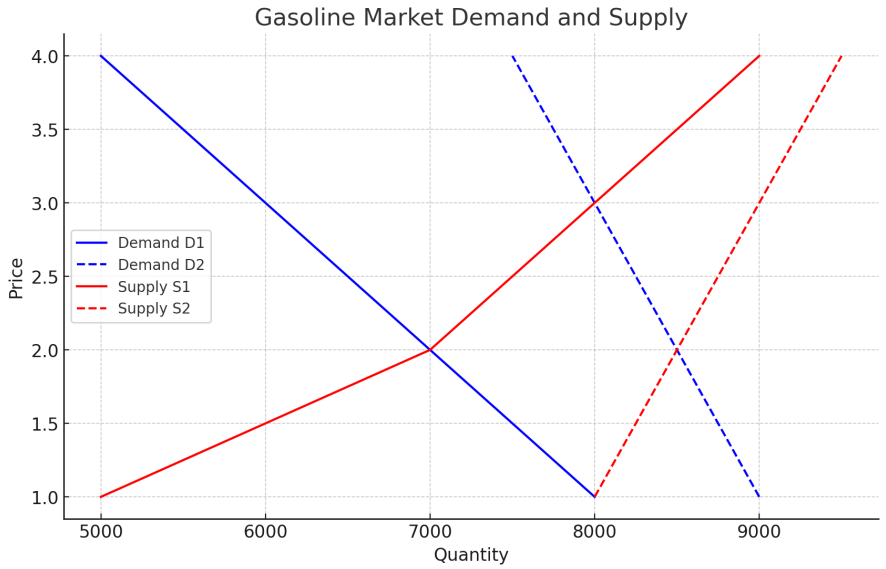


Q3(c)

c) If supply falls from S_2 to S_1 while demand declines from D_2 to D_1, does the equilibrium price rise, fall, or stay the same? What if only supply falls? What if only demand falls?

At an initial D_2S_2, equilibrium is price = \$2 quantity= 8500 gallons per month
At D_1S_1 equilibrium is price = \$2 quantity= 7000 gallons per month
Equilibrium price stay the same at \$2.

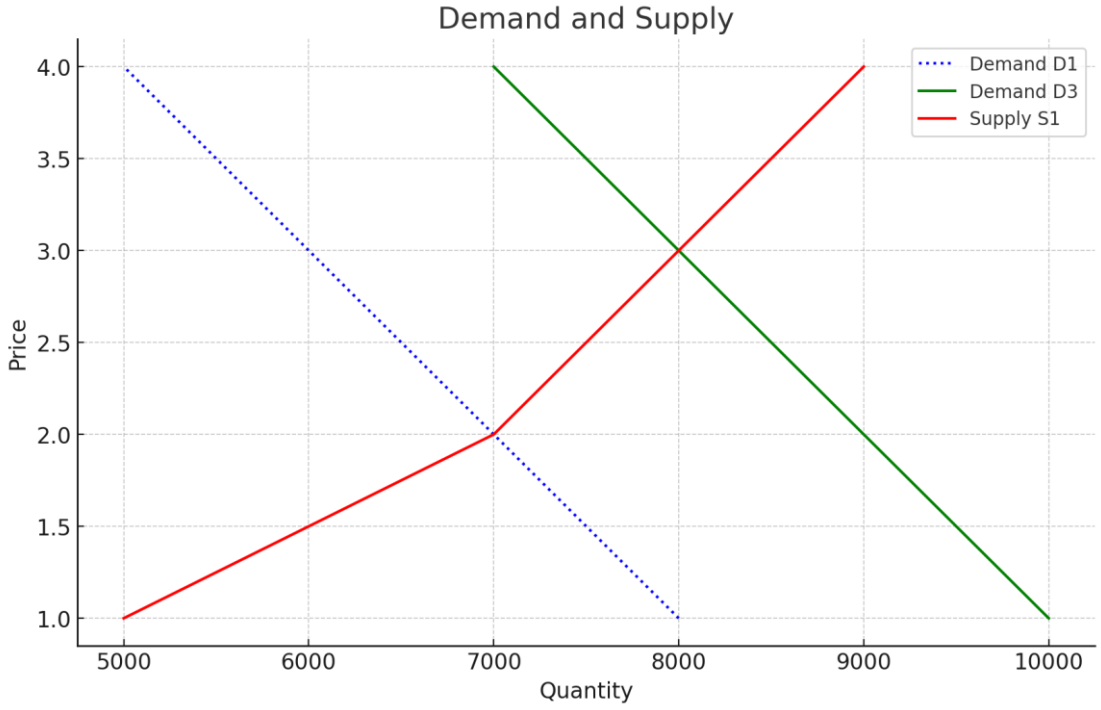
If only supply falls, we will be at D_2S_1, equilibrium price will rise to \$3.
If only demand falls, we will be at D_1S_2, equilibrium price will fall to \$1.



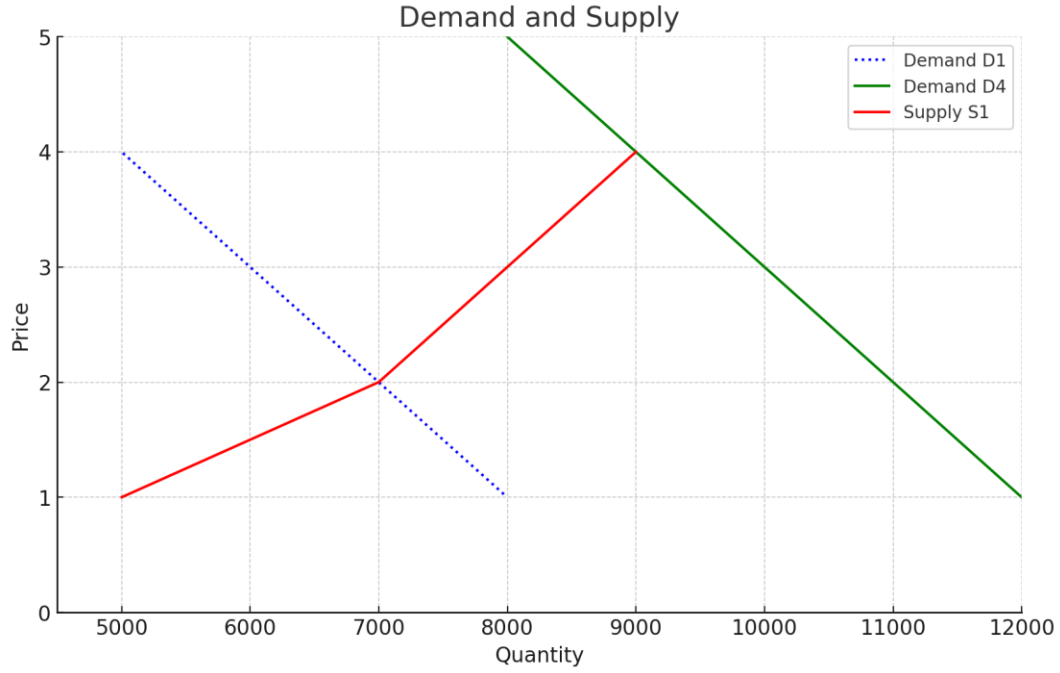
Q3(d)

d) Suppose that supply is fixed at S_1 and that demand starts at D_1. By how many gallons per month would demand have to increase at each price level such that the equilibrium price per gallon would be $3.00? $4.00?

demand has to increase by 2000 gallons/mo for equilibrium price to be at $3.00



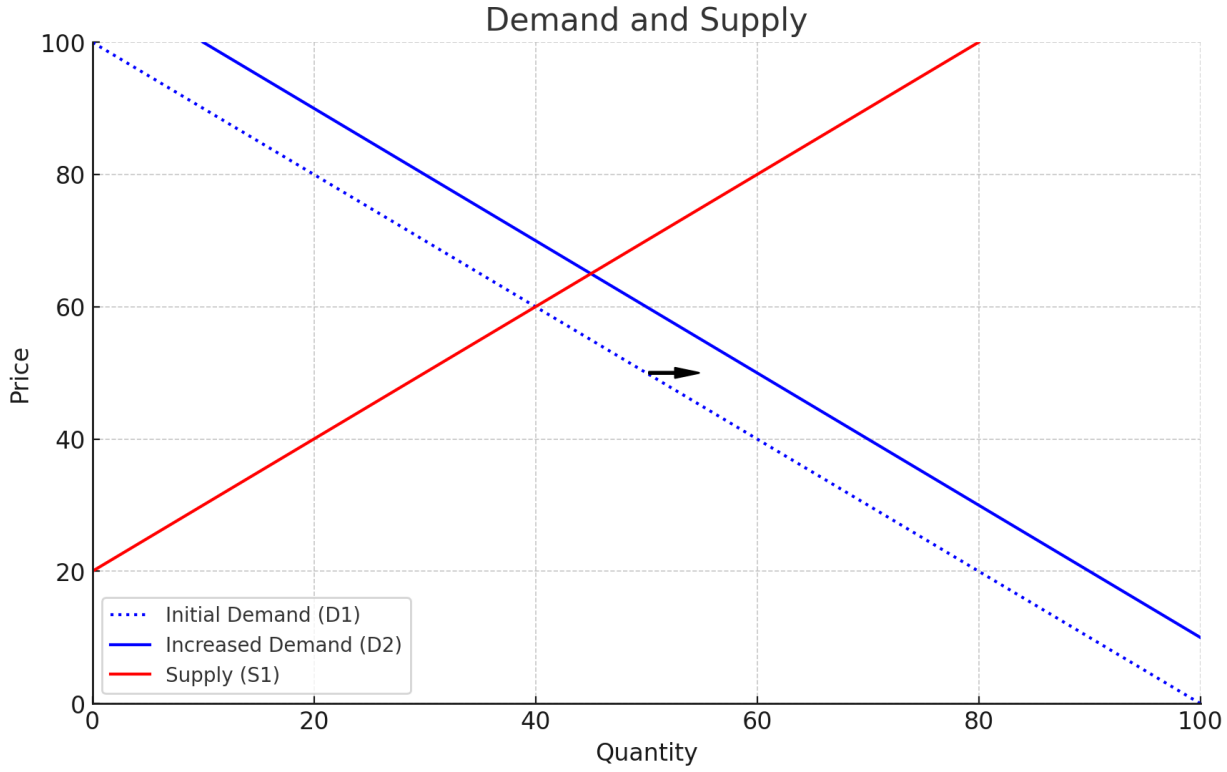
demand has to increase by 4000 gallons/mo for equilibrium price to be at $4.00



Q4 (a)

a) The price of tacos increases.

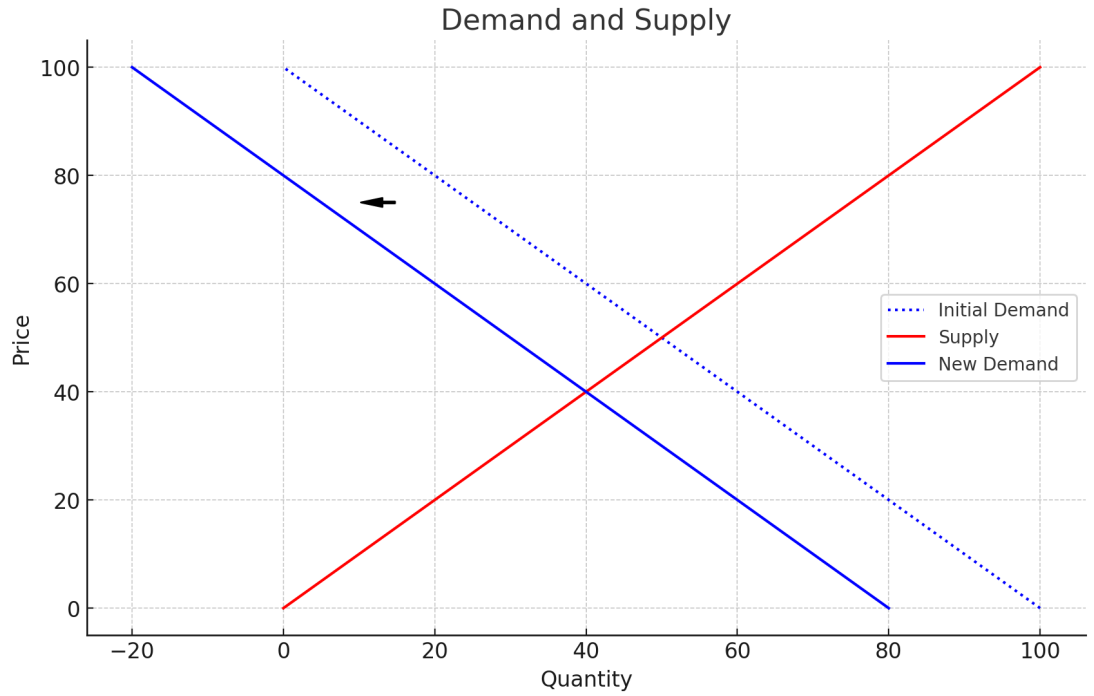
Assuming tacos are substitutes, demand for hamburgers will increase. While supply remains constant, both equilibrium price and equilibrium quantity will rise.



Q4 (b)

b) All hamburger sellers raise the price of their French fries.

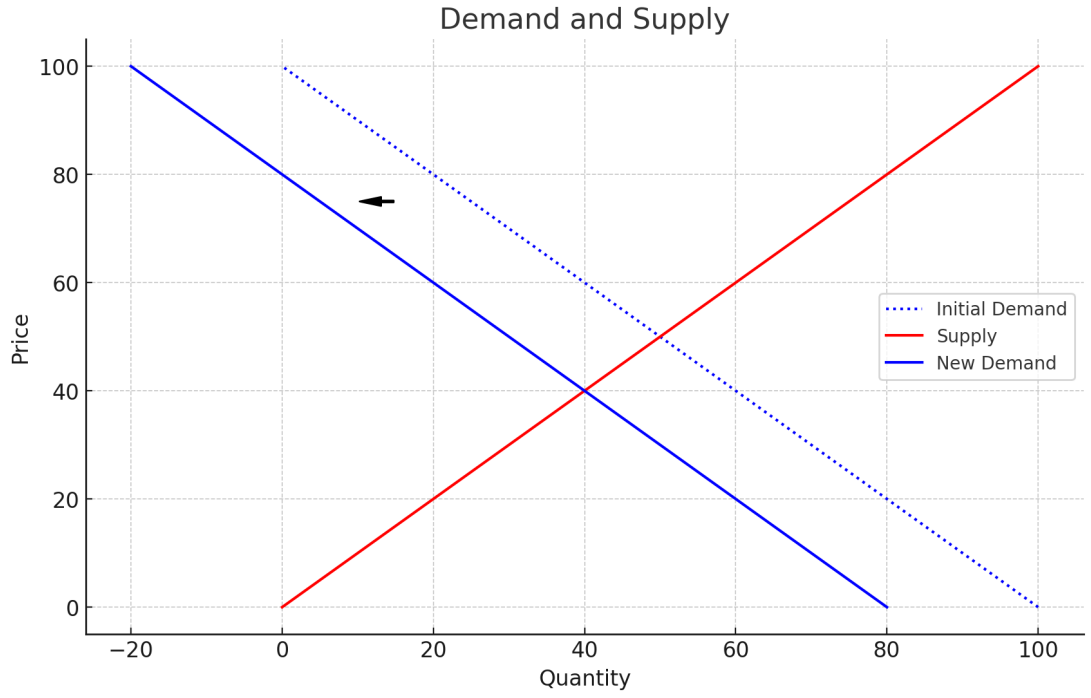
Assuming French fries are complements of hamburgers, demand for hamburgers will decrease as the meal becomes more expensive from the price hike of French fries. While supply remains constant, both equilibrium price and equilibrium quantity will fall.



Q4 (c)

c) Income falls in town. Assume that hamburgers are a normal good for most people.

Demand for hamburgers will fall. While supply remains constant, both equilibrium price and equilibrium quantity will fall.



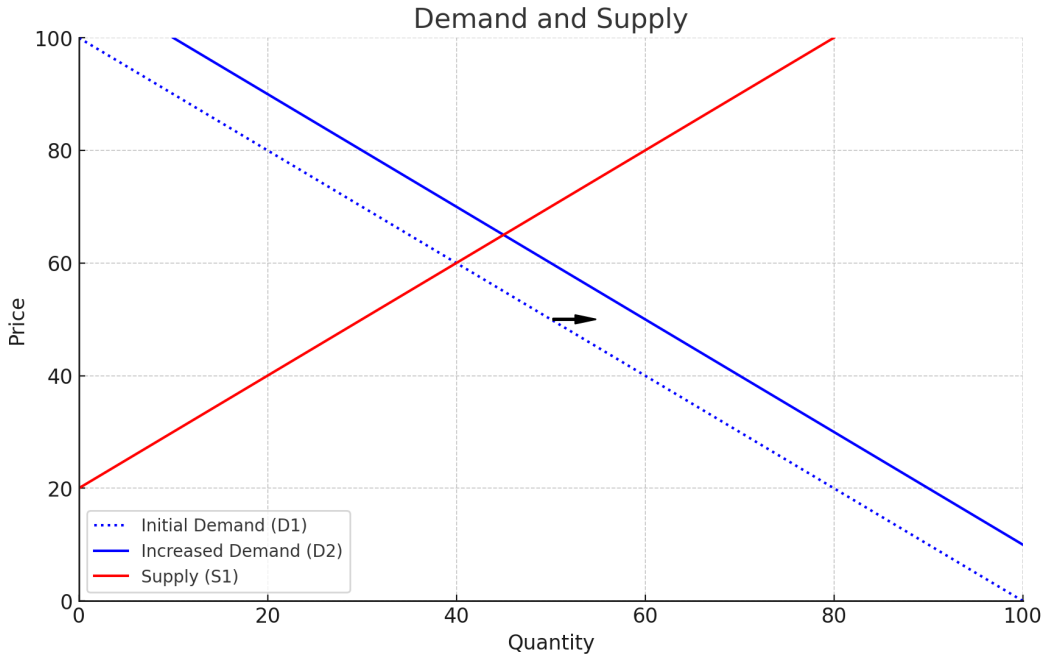
A **normal good** is a type of a good which experiences an increase/decrease in demand due to an increase/decrease in income

$$\frac{\Delta D}{\Delta I} > 0$$

Q4 (d)

d) Income falls in town. Assume that hamburgers are an inferior good for most people.

Demand for hamburgers will rise. While supply remains constant, both equilibrium price and equilibrium quantity will rise.



An **inferior good** is a type of a good which experiences a decrease/increase in demand due to an increase/decrease in income

$$\frac{\Delta D}{\Delta I} < 0$$

Example: cheaper cars

Q4 (e)

e) Hot dog stands cut the price of hot dogs.

Assuming hot dogs are substitutes, demand for hamburgers will decrease. While supply remains constant, both equilibrium price and equilibrium quantity will fall.