MODULE 3 (Supply)

1. Why does the supply curve slope up? (hint: marginal product and marginal cost)

DIMINISHING MARGINAL PRODUCT: EXTRA WORKER WILL PRODUCE LESS OUTPUT THAN PREVIOUS WORKER.

SUBWAY: ADD MORE WORKER CROWDS THE KITCHEN ⇒ MC ↑

2. You run a sandwich shop. Suppose your rent (which is a fixed cost) rises. How does that affect how many sandwiches you want to sell? Why?

WE SHOULD REMAIN USING MARGINAL COST.

THE PRINCIPLE REMAINS THE SAME !

WE'RE OPTIMIZING.

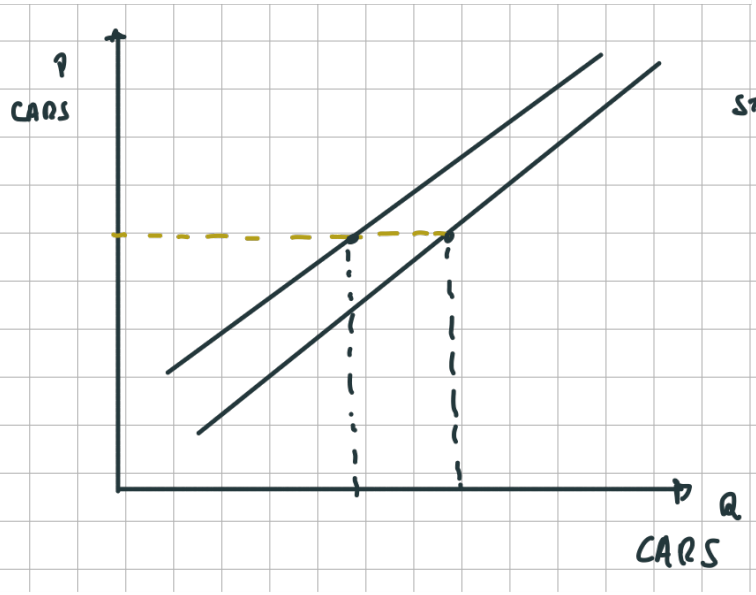
PRICE OF MEAT / BREAD ETC DID NOT INCREASE.

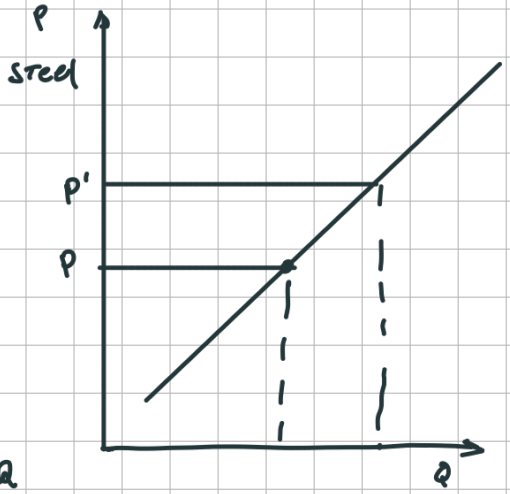
if PRODUCE MORE ⇒ MC > Price

↳ losing money.

3. Show (on a graph) how a rise in the price of steel affects the supply of cars. Label everything.

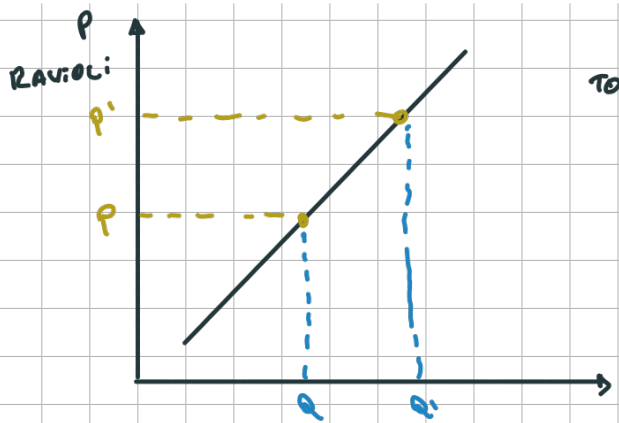
INPUT

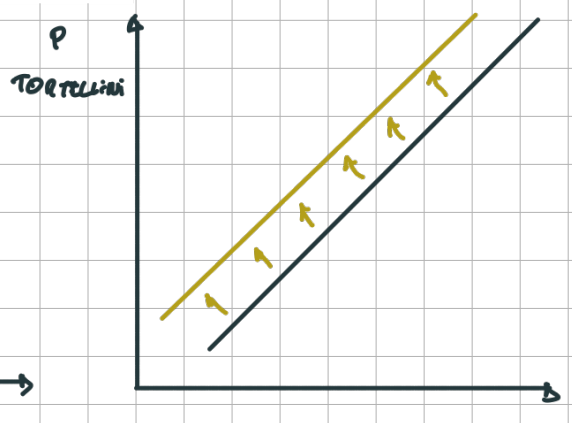




4. A firm sells ravioli and tortellini (both pastas stuffed with cheese). What would happen to each supply curve if the price of ravioli went up? (hint: making more of one necessitates making less of the other due to capacity constraints). Draw it!

LAW OF SUPPLY





5. On the graph below #6, graph this supply curve (solve for P first to get inverse demand): Q=-3+0.5P.

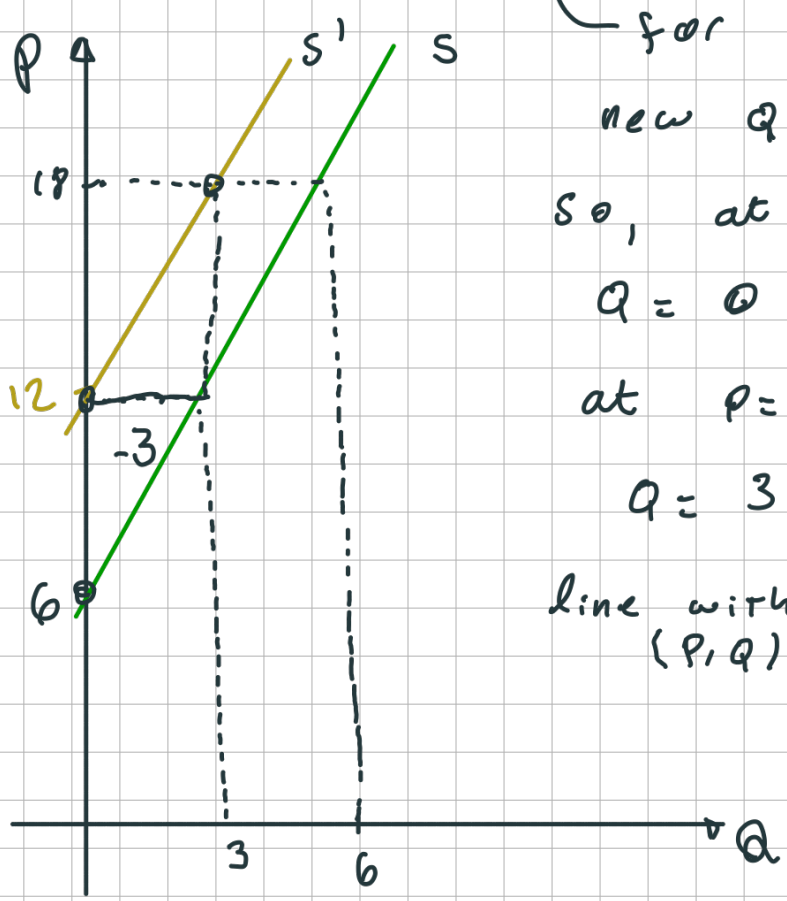
$Q = -3 + \frac{1}{2}P \Rightarrow P = 6 + 2Q$

$P = 6, \quad Q = 0$

$P = 12, \quad Q = 3$

$P = 18, \quad Q = 6$

6. Draw what happens if quantity supplied falls by 3 units at each price (S shifts back by 3). What's the equation for the new supply curve?



↳ for each price, new Q is −3.

So, at P = 12, Q = 0

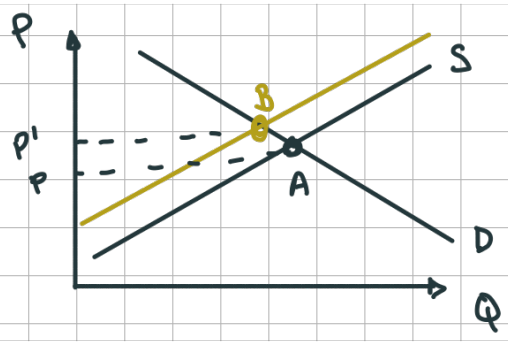
at P = 12, Q = 3

line with points: (P, Q) = (18, 3) and (12, 0)

Solving: same slope

$P = 12 + 2Q$

1. Show what happens to our Supply and Demand model when input prices rise. Label the starting point (initial equilibrium) A and the end point B.

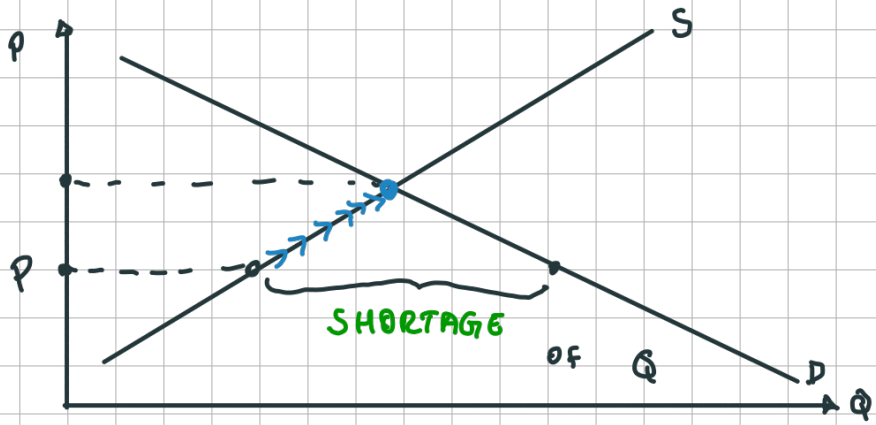


Q: affects demand? No

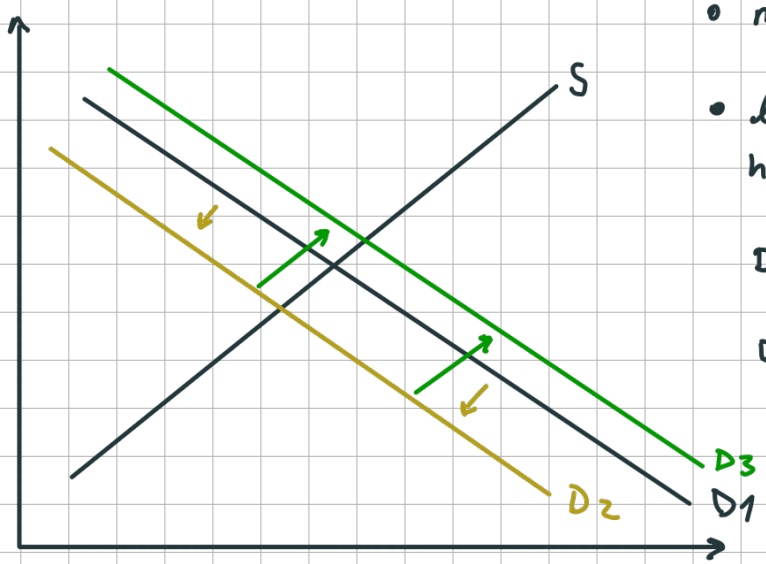
Q: affects supply? Yes

How? CONTRACTS supply
MC ↑

2. What do we mean when we say a price is "too low"? How does a market respond to this scenario? Draw it.



3. Draw and explain what you think would happen to the local housing market as interest (mortgage) rates rise AND local companies increase hiring. (higher mortgage rates make buying houses costlier but is NOT the same thing as the price of the house).



- mortgage rates rising
- local companies increase hiring.

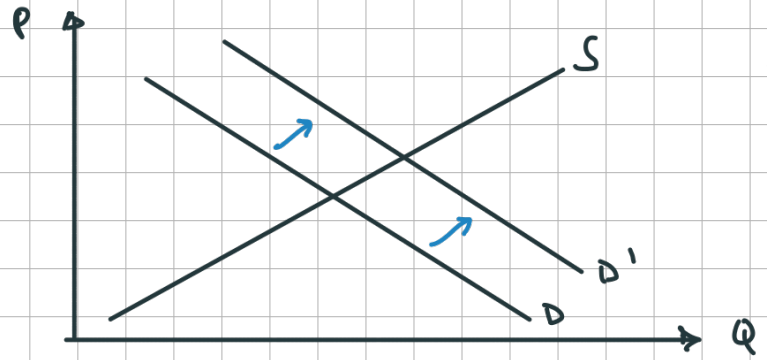
Do we affect supply?

Demand?
→ yes,
NOT same direction

NOTE: D2, D3 we don't KNOW THE MAGNITUDE.

4

4. What's wrong with this statement? "Demand increased so supply must increase (shift out) too since people want to buy more."



QUANTITY supplied.

5. Suppose Qd=20-2P and Qs=P-4
   a. Solve the system for P and Q

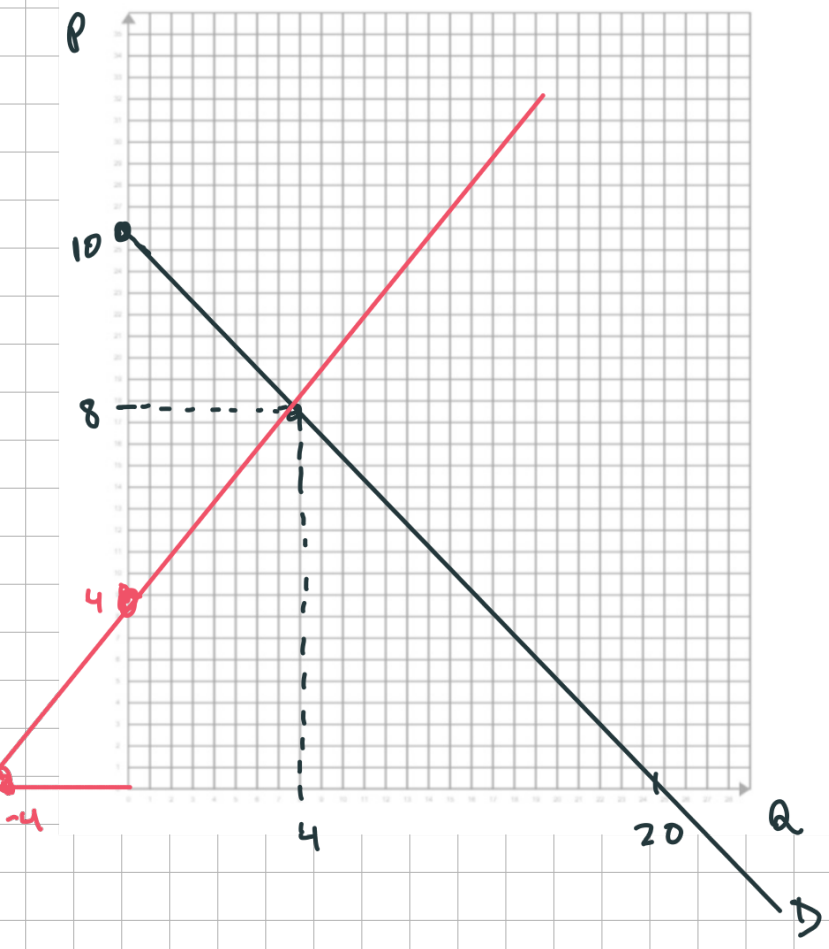
$Q_D = Q_S \iff 20 - 2P = P - 4$

$24 = 3P$

$P = 8$

So, $Q = 20 - 16 = 4$, $(P, Q) = (8, 4)$

b. Graph the system below (don't forget to solve for P to make it easier). Show the equilibrium point.



We know 1 point:

(8, 4) belongs to both.

Demand:

$Q_D = 20 - 2P$

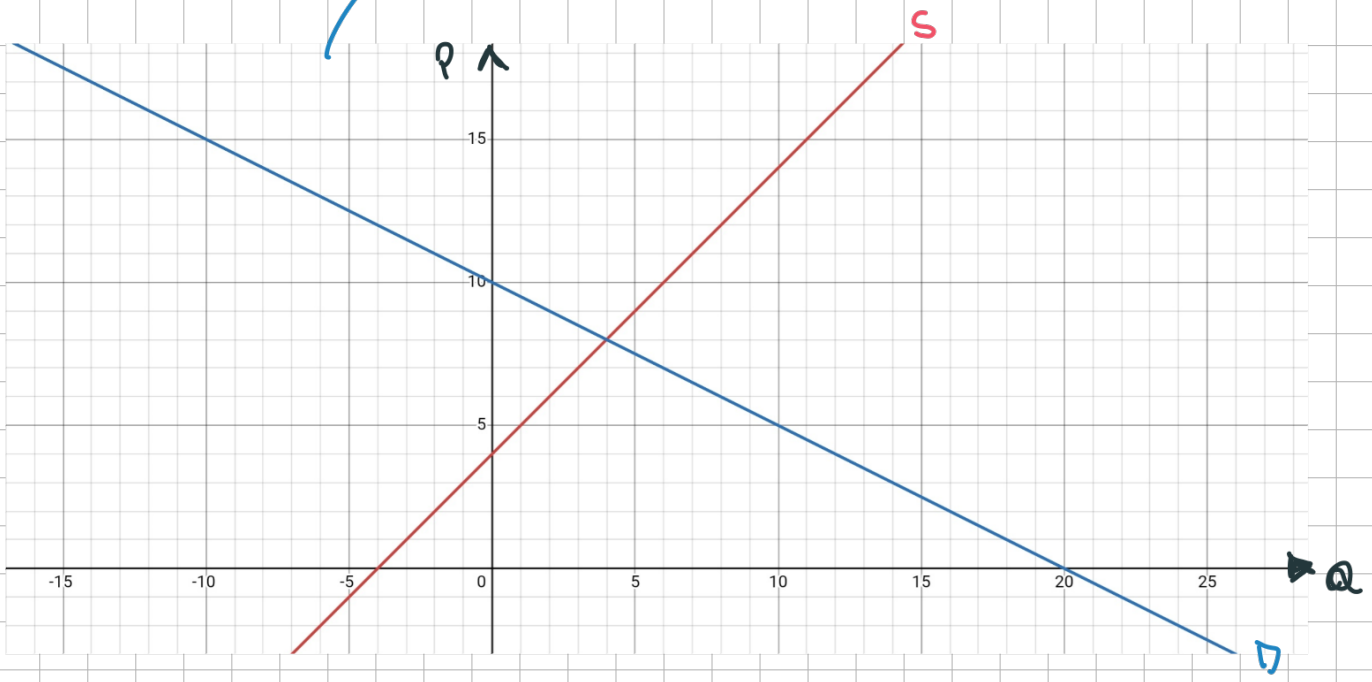
$P = 10 - \frac{1}{2} Q_D$, $P = 0 \Rightarrow Q_D = 20$, $Q_D = 0 \Rightarrow P = 10$

Supply:

$Q_S = P - 4$ $P = 0 \Rightarrow Q_S = -4$

$P = Q_S + 4$, $Q_S = 0 \Rightarrow P = 4$

Desmos picture (app / software)



Main Take Aways:

Law of Supply: P ↑ => Q ↑

Law of Diminishing Marginal Product

Supply Shifters ≠ Demand Shifters

Shortage: Price below equilibrium $Q_D > Q_S$
Market forces cause P to rise

Surplus: Price above equilibrium $Q_D < Q_S$
Market forces cause P to fall