Lecture 9(iii)
You should start "Supply" Worksheet at week 10 of Canvas.

Midterm Mon Nov 12, 7pm-8pm
If conflict, register by Mon, (Nov 5), 4pm to avoid **late registration penalty**. Email head grader, headgrader@gmail.com

- Question and Answer Sessions
- Wed Nov 7: 4-5:30: Anderson 310
- Wed Nov 7, 7:30-9: Anderson 210
- Thur Nov 8 3:30-5 : Anderson 210

Don't forget to vote for the carbon policy platforms at Canvas week 10 to get bonus points.

Lecture

1. Review: Short-run Supply of Firm

2. Long-run Supply of Firm

3. Long-run Supply of Competitive Industry

4. Short-run Supply of Competitive Industry

Short Run Supply
of Competitive Firm

Rule:

- Find quantity such that P = MC

- Check that P ≥ AVC at that quantity, and then produce there.

-

- Otherwise shut down.

Short Run Supply Curve for S11
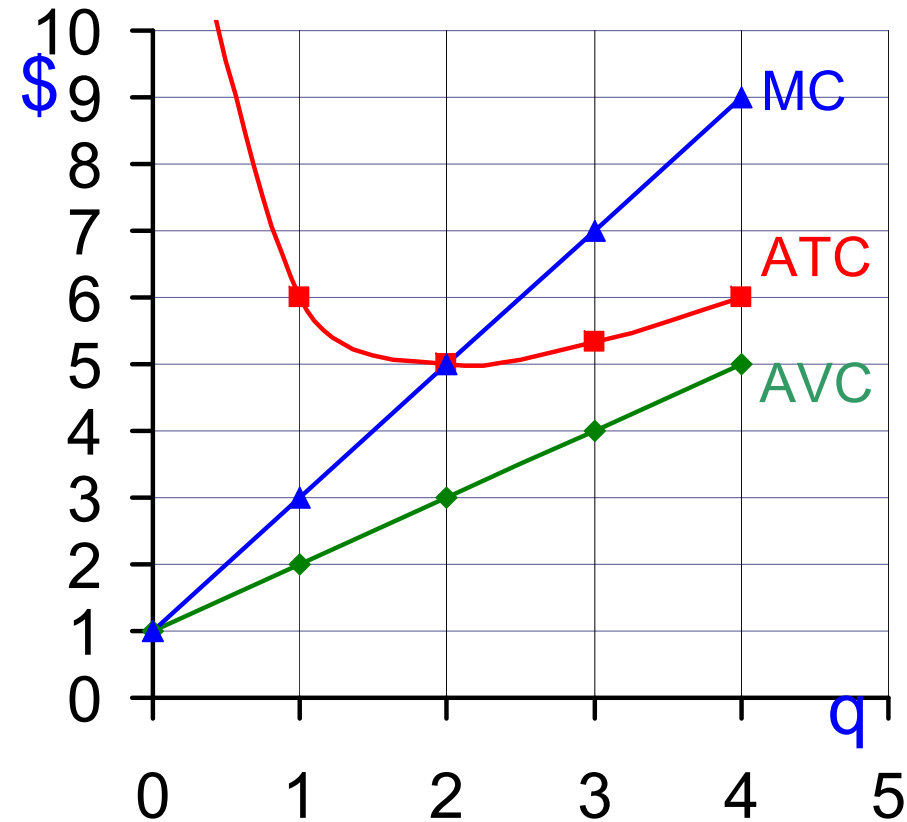
What happens when P = 3?

P = MC at Q = 1

AVC = 2 at Q = 1, so P > AVC

Profit = R – TC
$\quad$ = P×Q – FC – VC
$\quad$ = 3×1 - 4 - 2 = -3

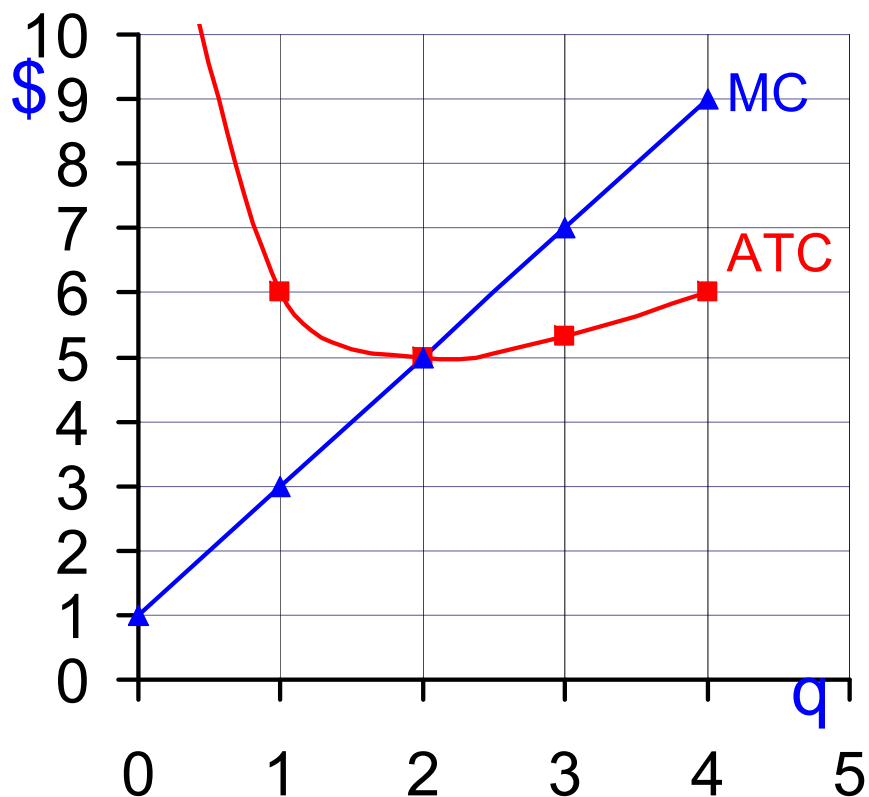Compare with loss at Q = 0.

What happens at P = .5?

Here is a different example where AVC is first decreasing then increasing (your textbook has a graph like this)

Long Run Supply of Firm
Supply when rent on factory is variable input

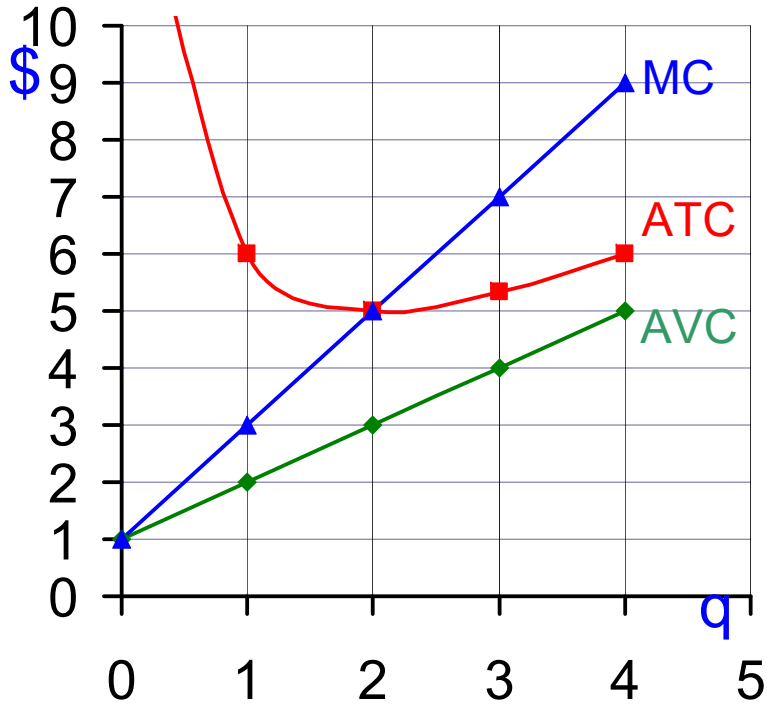# Long Run Supply of Industry
With Free Entry

Suppose:

• Same Technology is available for all
• No barriers to entry
• Input prices to industry do not go up as the industry expands
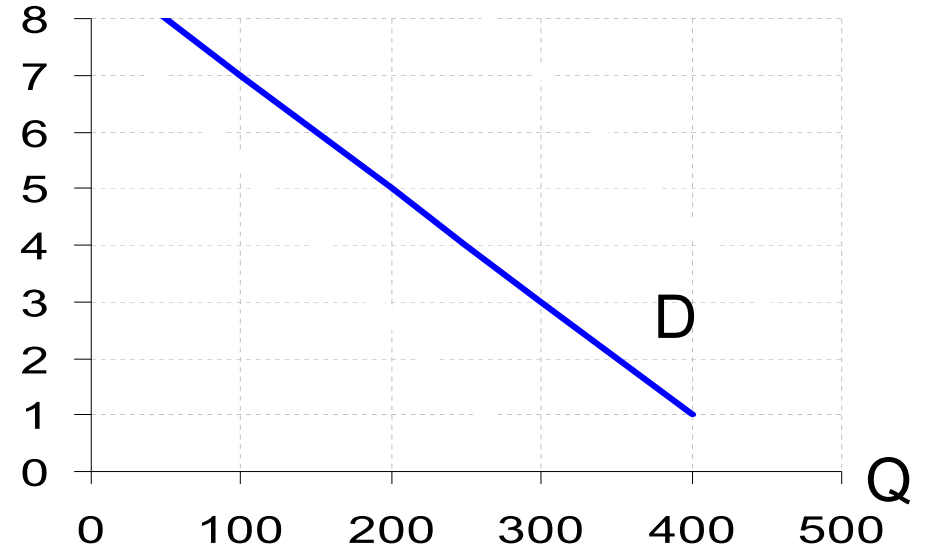
Then in long-run equilibrium:
• Price equals P* = MinATC
• Each firm produces quantity q* where ATC is minimized
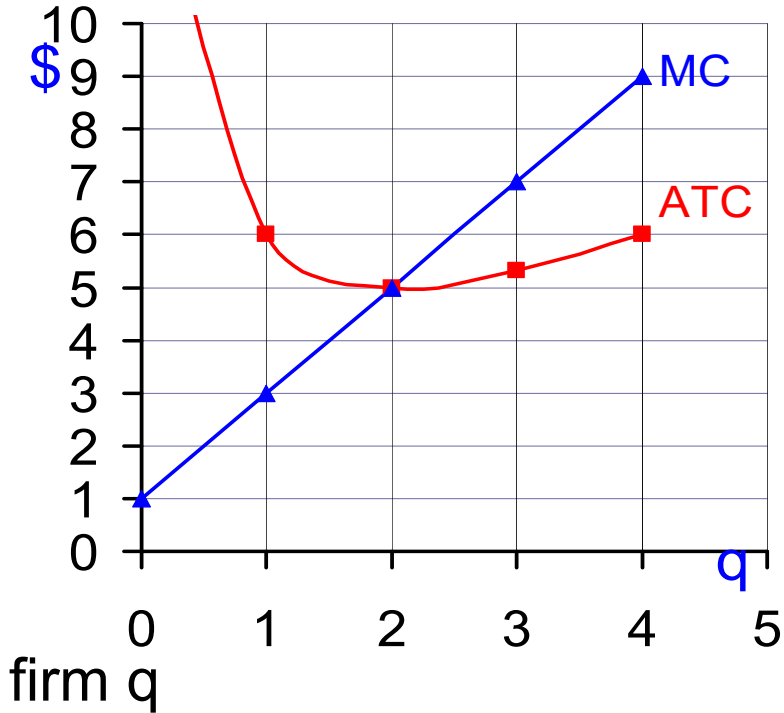• Number of firms N* is Demand at P* divided by q*.

Again:S11 Cost Structure

MC

ATC

AVC

$

q

Variable	Definition
P^{LR}	long-run price
Q^{LR}	long-run quantity
q^{LR}	output per firm
N^{LR}	number of firms

Long Run Supply of Industry

D

Q

Again:S11 Cost Structure(FC = $4)

Variable	Definition
P^{LR}	long-run price
Q^{LR}	long-run quantity
q^{LR}	output per firm
N^{LR}	number of firms

Long Run Supply
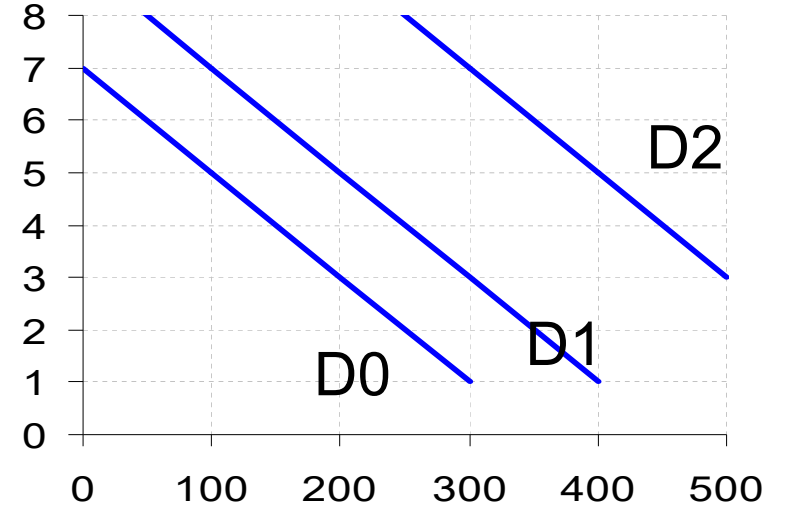
	Demand		
	D0	D1	D2
P^{LR}			
Q^{LR}			
q^{LR}			
N^{LR}			

First Welfare Theorem at Work Here

In long-run competitive equilibrium, Q^{LR} is produced at in the minimum cost way (Efficient Production)
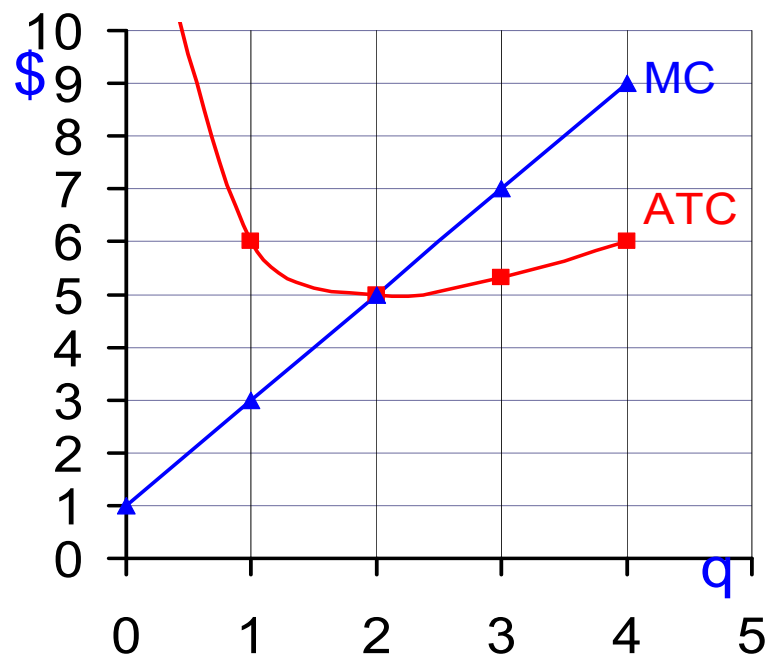
Short Run
Number of firms is fixed.

Suppose in long-run equilibrium at when demand is D1 (so N = 100)

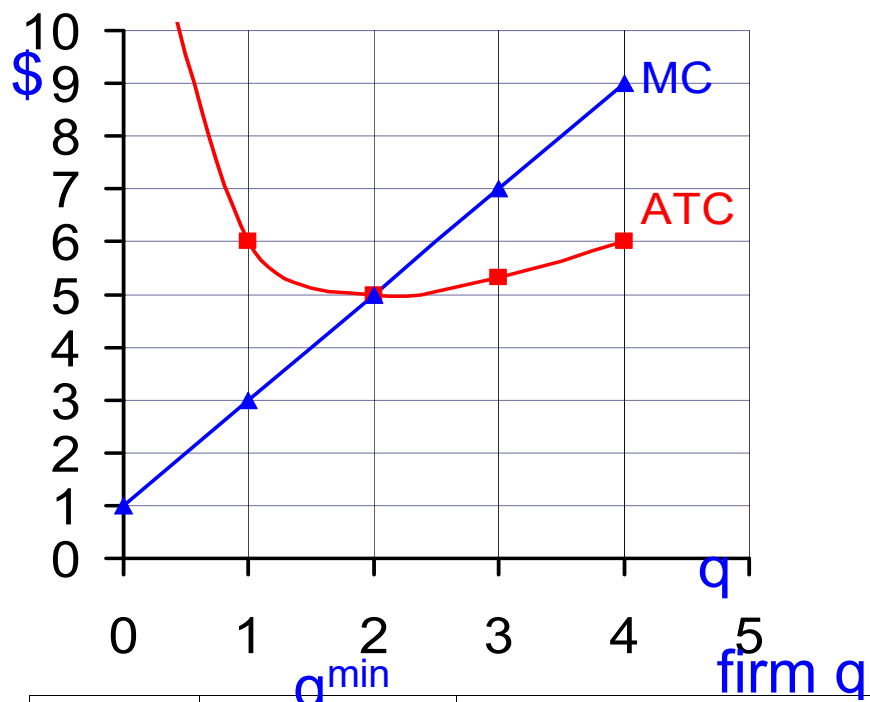What is Short-Run Supply Curve?

Cost Structure

Price	Firm SR supply	Industry SR supply (N=100)
3	1	
4	1.5	
5	2	
7	3	

For future reference,

some points on ATC...

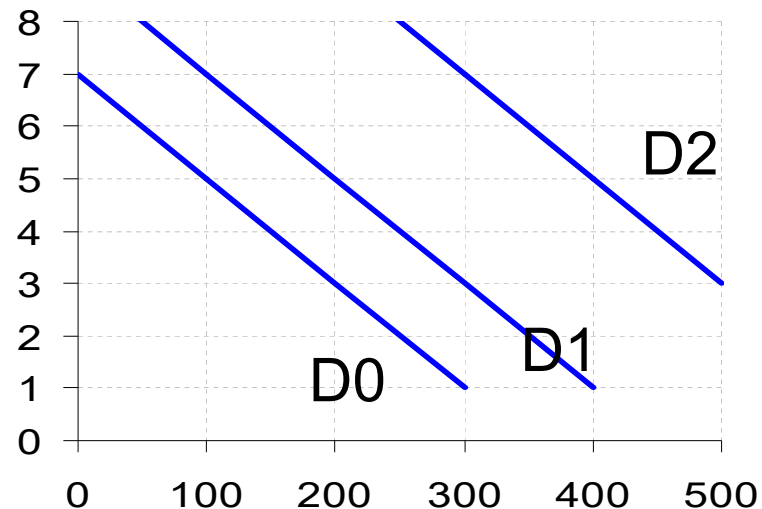| q	ATC
1	6
1.5	5.17
2	5
3	5.33
4	6

For midterm (and practice problem)
I will either give a table like this.
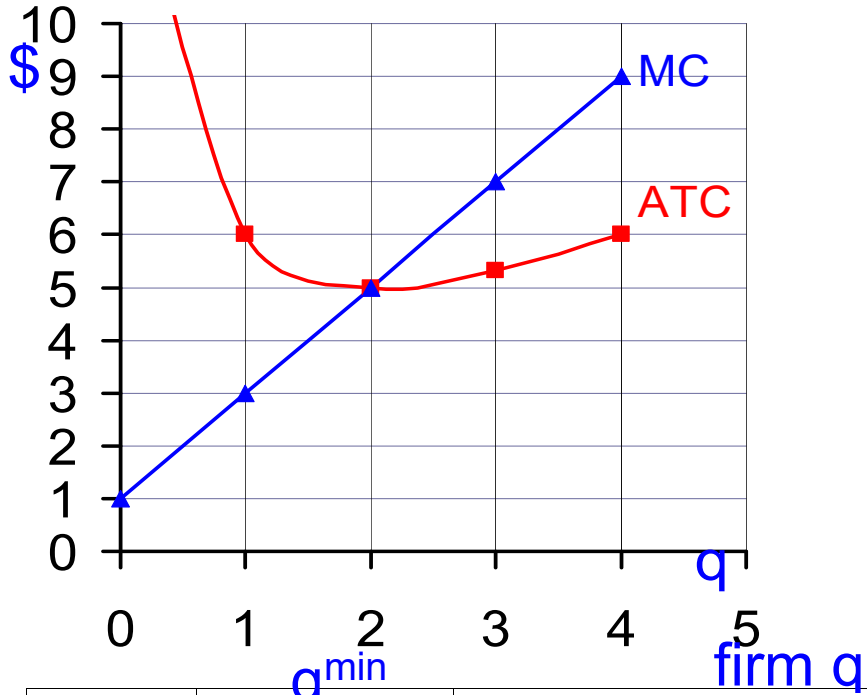Or you find this information on the
graph.

Cost Structure

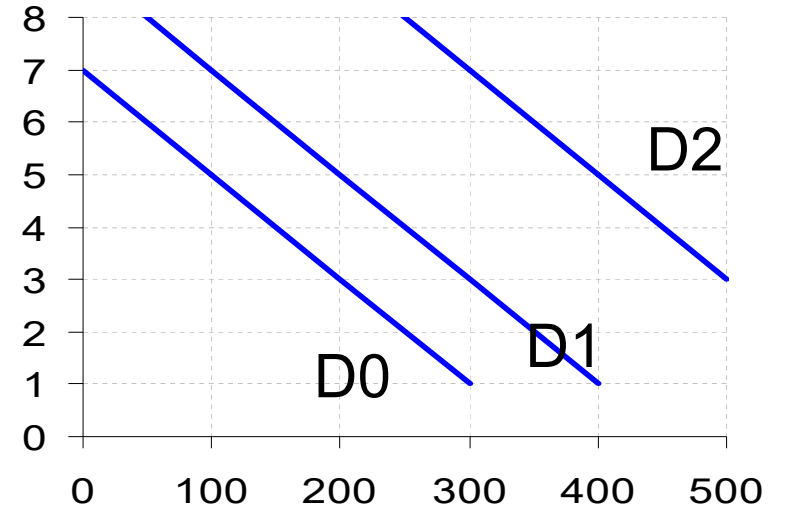| Price	Firm SR supply	Industry SR supply (N=100)
3	1	1*100=100
4	1.5	1.5*100=150
5	2	2*100=200
7	3	3*100=300

Short-Run Supply (N=100)

Suppose start at D1 in long-run eq.
Suppose shift to D2. In short run:

P→ _____

q→ _____

firm profit = [P – ATC]q

$$=[7 – 5.33]*3 = 5$$

Cost Structure

Price	Firm SR supply	Industry SR supply (N=100)
3	1	1*100=100
4	1.5	1.5*100=150
5	2	2*100=200
7	3	3*100=300

Short-Run Supply (N=100)

Suppose start at D1 in long-run eq.
Suppose shift to D0. In short run:

$P \rightarrow$ _____

$q \rightarrow$ _____

firm profit = [P – ATC]q

=[4 – 5.17]*1.5 = –1.75