Worked Production and Cost

Half Week?

- Why we have only one module this week. There will be two next week.
- The next modules on perfect competition trough monopoly are the hard ones in the class.
- We are currently about two weeks behind the usual for in-person courses.

Exercise 1 (Groups)

Give three examples, with context, of: + Fixed input/cost + Variable input/cost

Give the reason why you think the input/cost is variable or fixed.

Nominate a speaker.

A few Rules on costs

- FC is fixed
- $TC = VC + FC$
- $VC(0) = 0$
- $AC = AVC + AC = \frac{TC}{Q} = \frac{VC}{Q} + \frac{FC}{Q}$
- $MC(Q) = TC(Q+1) - TC(Q) = VC(Q+1) - VC(Q)$ The non-calc definition varies by textbook. Caution.

Fill in the blank and say why.

Q	TC	VC	FC	AC	AFC	AVC	MC
0	2						3
1	5						
3	12						

Q	TC	VC	FC	AC	AFC	AVC	MC
0							
1		2	5				
4	20						x

About the diagrams

You tend to see two kinds in the book:

1. Linear Marginal Cost ($MC = \alpha q$):

- $AVC = \frac{\alpha}{2} q$
- Profit maximizing is just where lines cross.

1. Parabolic Average variable cost ($AVC = \alpha(q - m)^2 + b$)

- Shows the increasing marginal product of labor, declining marginal cost range.
- Infinities for low q.

Getting Diagrams Right is Key

You need to be able to see the relationships.

- The steps and graphical hints are mostly to help you see the basic relationships.
- There are a few mathematical requirements, e.g., MC cuts AC at the min of AC, but otherwise the hints are to give you enough space to see areas.
- The order is different depending if you are drawing linear marginal cost or parabolic AVC.

Steps: Linear Marginal

- Axis with labels. \$ or costs list, AC, MC, etc and q/t is fine.
- Draw in MC as a line with zero intercept
- AVC line half as steep as MC with intercept at zero.
- AC is hard:
    - $AC = AFC + AVC$
    - Starts far above AVC since AFC is large for small q.
    - Gets closer to AVC as q increases
    - Is cut by MC at the minimum.
    - Looks like a skewed parabola

Try it. Four people at a time in groups.

Steps: Parabolic AVC

- Axis with labels. $ or costs list, AC, MC, etc and q/t is fine.
- Draw AC as a smile that covers about 2/3 of your graph.
- MC looks like a fish hook or Nike Swoosh that cuts AC at the minimum.
- AVC is hard:
  - AC = AFC + AVC
  - Starts far below AC since AFC is large for small q.
  - Gets closer to AC as q increases
  - Is cut by MC at the minimum.
  - Looks like a skewed parabola

Try it. Four people at a time in groups