Unit 2
Supply in a Competitive Market (Ch. 8)
10/16

ECON 323 – MICROECONOMIC THEORY – DR. STRICKLAND

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Suppose the market for financial planning services is perfectly competitive and the market price is $120. One financial planner, Oscar, has a short-run total cost given by $TC = 100 + 4Q^2$ and a marginal cost given by $MC = 8Q$, where Q is the number of financial plans prepared per day. How many financial plans should Oscar prepare daily if he wants to maximize his profit?

A. 5

B. 112

C. 15

D. 2.24

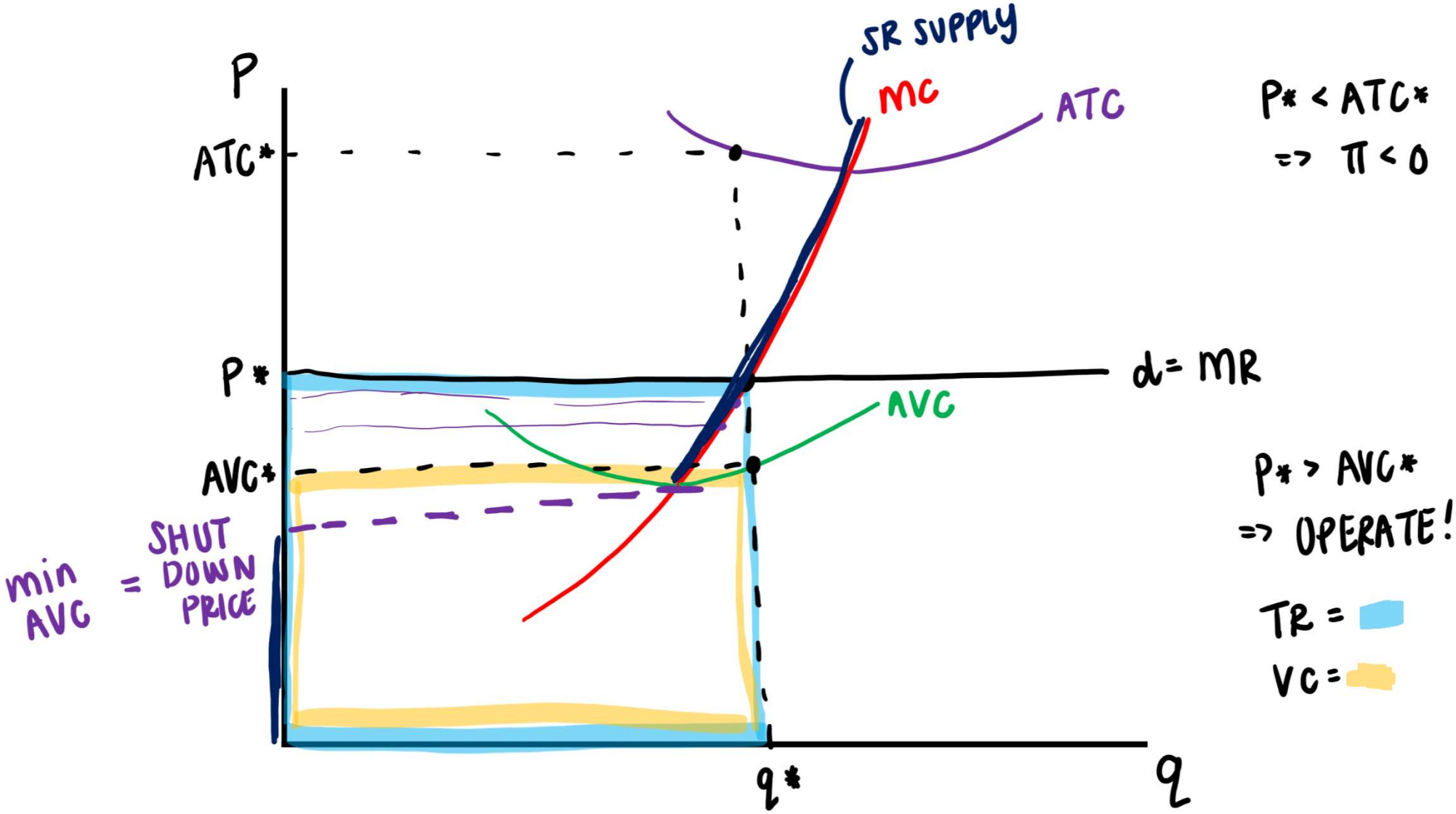
* MR = MC *

FOR PC FIRM: P = MR => * P = MC *

$120 = 8Q$

$Q^* = 15$

Short-run shutdown decision & firm supply curve



Let's practice!

Cardboard boxes are produced in a perfectly competitive market. Each identical firm has a short-run total cost curve of

$$TC = 6Q^3 - 36Q^2 + 60Q + 50$$

and a short-run marginal cost curve of

$$MC = 18Q^2 - 72Q + 60$$

where quantity is measured in thousands of boxes per week.

Calculate the price below which a firm in the market will not produce any output (the shutdown price).

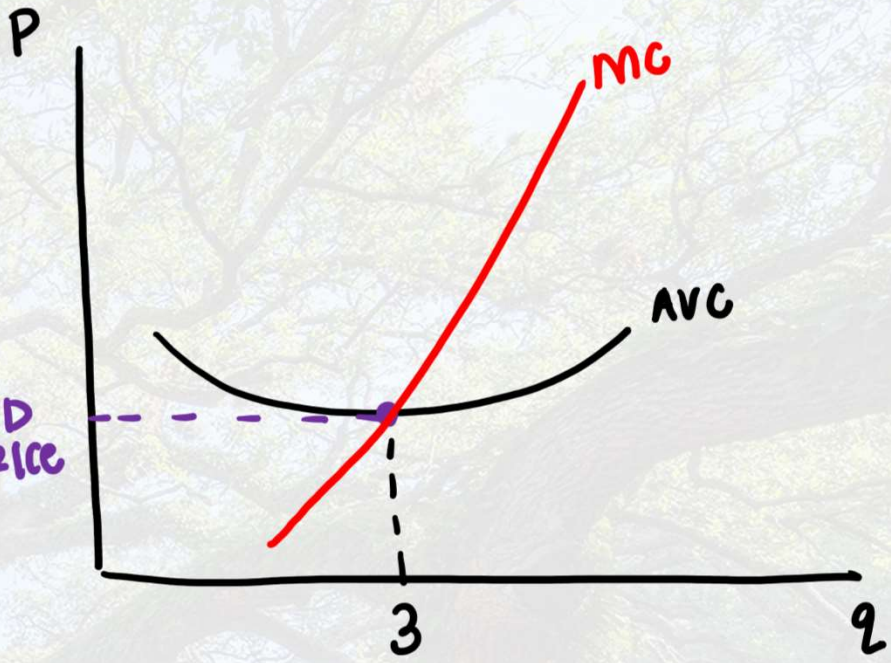
$$TC = 6Q^3 - 36Q^2 + 60Q + 50; MC = 18Q^2 - 72Q + 60$$

* GOAL: SHUT DOWN PRICE

① FIND $AVC = \frac{VC}{Q}$

$$AVC = \frac{6Q^3 - 36Q^2 + 60Q}{Q}$$

$$AVC = 6Q^2 - 36Q + 60$$



② AVC IS MINIMIZED WHERE AVC = MC

$$6Q^2 - 36Q + 60 = 18Q^2 - 72Q + 60$$

$$12Q^2 = 36Q$$

$$12Q = 36$$

$$Q = 3$$

③ PLUG Q INTO AVC OR MC

$$AVC(Q=3) = 6(3)^2 - 36(3) + 60$$

$$= \boxed{\#6}$$

Producer surplus in the short run

Producer surplus:

- The **benefit** accrued to the producer from the sale of a product
- The difference between the **market price** and a supplier's **willingness to sell**

$$PS = P^* - WTS$$

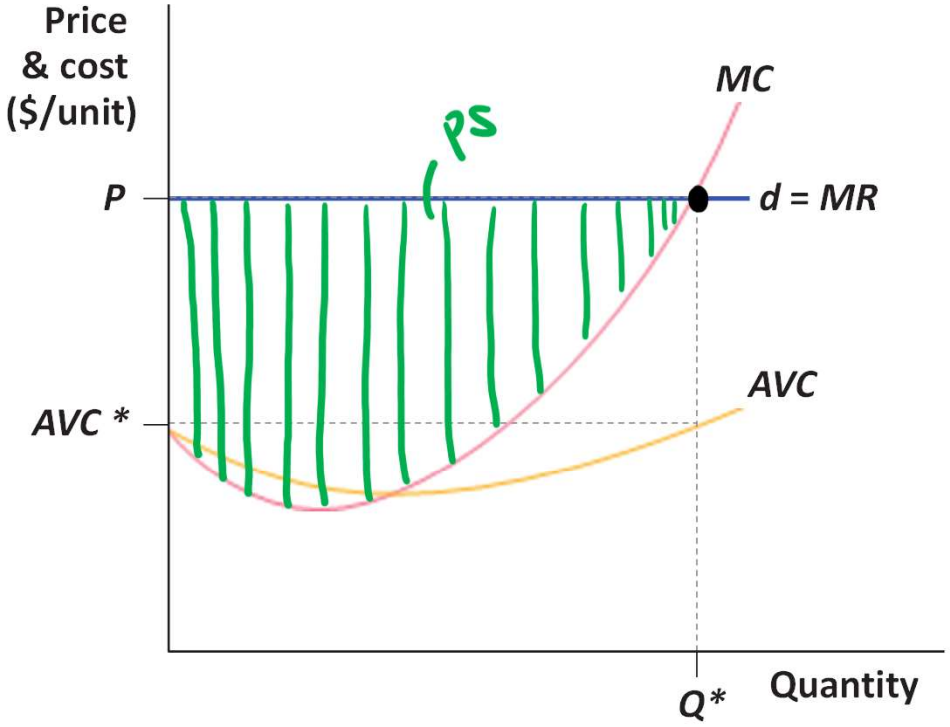
Firm's producer surplus in the short run

PS = P* - MC (WTS)

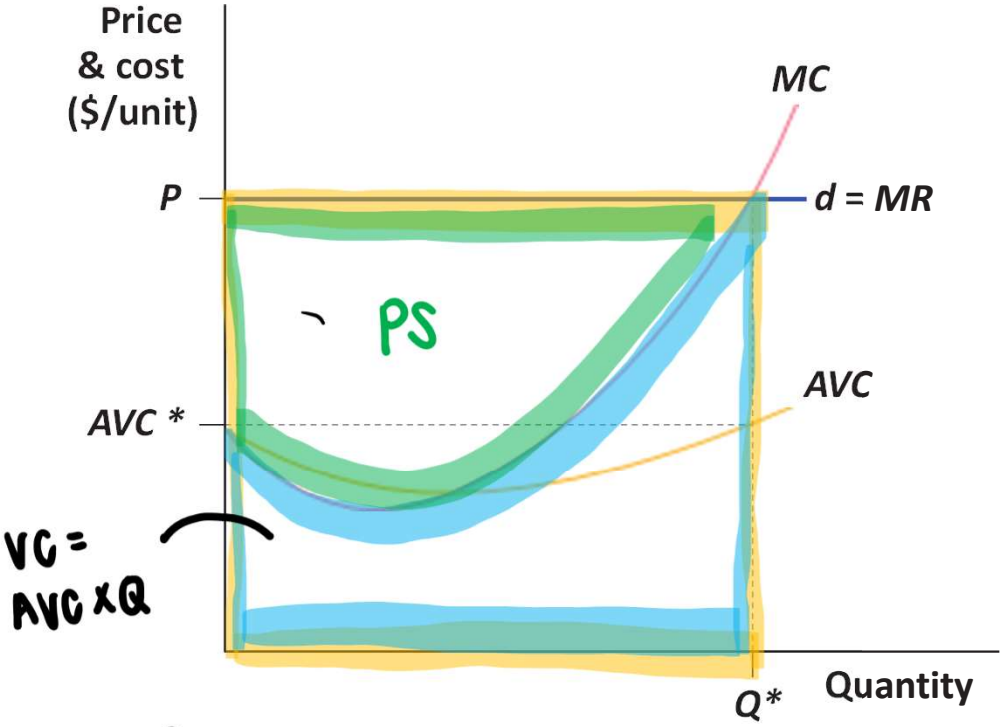
ADD UP P FOR EVERY Q => TR

ADD UP MC FOR EVERY Q => VC

(a) Producer Surplus: Adding All of the Price-Marginal Cost Markups



(b) Producer Surplus: Total Revenue Minus Variable Costs



PS = TR - VC

π = TR - TC

π = PS - FC

Long-run shutdown decision

In the long run, all inputs (and costs) may be adjusted

- The firm will only operate if *all* costs are covered by revenue

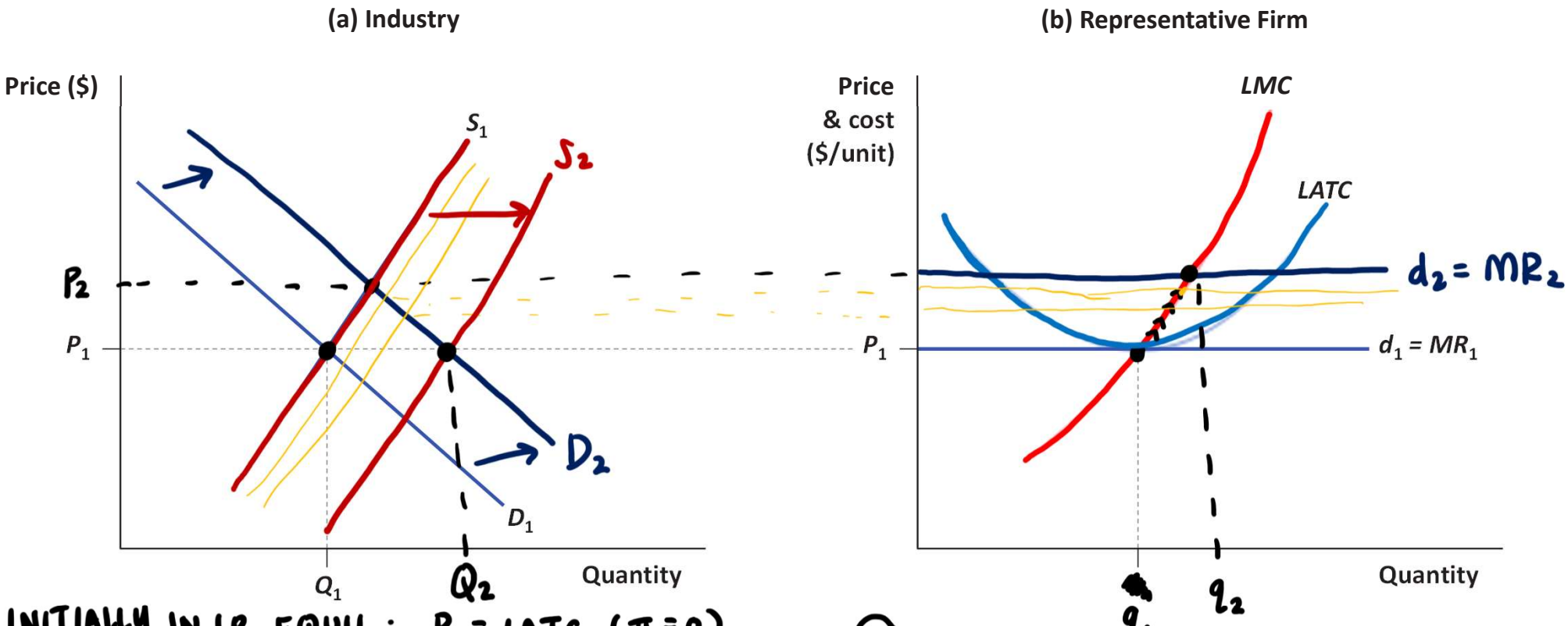
OPERATE: $TR \geq TC \quad (\pi \geq 0)$

$P \geq ATC$

"SHUT DOWN" = EXIT

* IN LR equil: $\pi = 0$ (ELON)

Deriving the long-run equilibrium



⓪ INITIALLY IN LR EQUIL: $P_1 = LATC$ ($\pi = 0$)

① $\uparrow D$ to D_2 => $\uparrow P$ to P_2

② $\uparrow P$ to P_2 => $\uparrow d$ to d_2 => $\uparrow q$ to q_2

($\pi > 0$ IN SR BIC $P_2 > ATC$)

③ $\pi > 0$ => FIRMS ENTER IN LR => $\uparrow S$ UNTIL $\pi = 0$ ($P = LATC$)

*LR EQUIL PRICE = MIN LATC