PERFECT COMPETITION

Optimal Output Rule: *produce the quantity where* **MR=MC**

Average revenue (AR) = TR/Q. When the firm is a price taker, **AR = PQ/Q = P**

Price-taking firms cannot raise or lower the price, the horizontal **P=MR=AR=D** **(this line also serves as the demand curve for the product. A horizontal demand curve was previously described as "perfectly elastic.")**

Price, cost

$24

20
Market price — 18
16
12
8
6

Optimal point

MC

E

MR = P = D

0   1   2   3   4   5   6   7   Quantity

Profit-maximizing quantity

> Each identical firm's short-run supply curve is their MC curve starting from the shut-down point (AVC curve)

Total profit

π= TR – TC
  o *If TR>TC; positive profit*
  o *If TR < TC; negative profit (loss)*

Profit per unit

Π per unit = (P – ATC)
  o *If P > ATC; positive profit*
  o *If P < ATC; negative profit (loss)*

"break-even" occurs when the profit-maximizing output Q* is at the point where **P=MR=MC=ATC.** This can only happen at the **minimum of the ATC** curve

Price, cost

MC
ATC
MR = P

Q*   Quantity
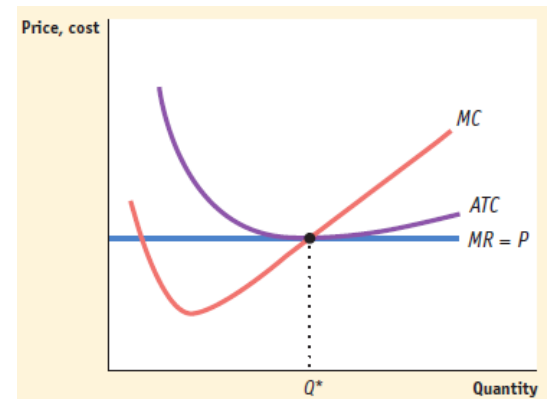
The shut-down rule: Shut down if; **TR < TVC or P < AVC** the firm should continue to produce, if **TR>=TVC** (on a per-unit basis, this is **P>=AVC**)

*LONG-RUN
If the current price is high enough for firms to earn short-run economic profits, the profits will not last in the long run. As long as existing firms are making a profit, new firms have an incentive to enter the industry. More producers in the market shift the short-run market supply curve to the right & the price begins to fall in the market. As the price falls, each firm produces less along the MC curve, but more total output is produced in the market because more firms now exist in the market.

(a) Existing Firm Response to Increase in Demand

Price, cost

An increase in demand raises price and profit.

MC

$18
14

Y
ATC
X

0   Quantity

(b) Short-Run and Long-Run Market Response to Increase in Demand

Price

Long-run industry supply curve, LRS

S_1 S_2

Y_{MKT}
X_{MKT} Z_{MKT} D_2
D_1

0   Q_X Q_Y Q_Z Quantity

Increase in output from new entrants

(c) Existing Firm Response to New Entrants

Price, cost

Higher industry output from new entrants drives price and profit back down.

MC

Y
ATC
Z

0   Quantity

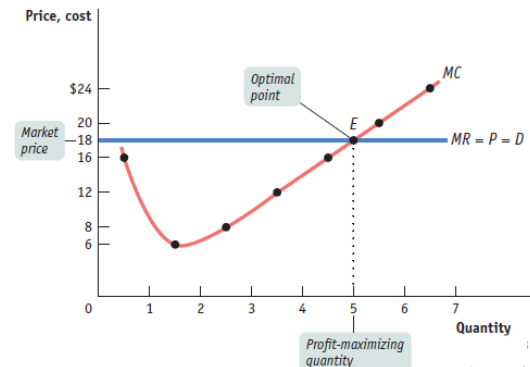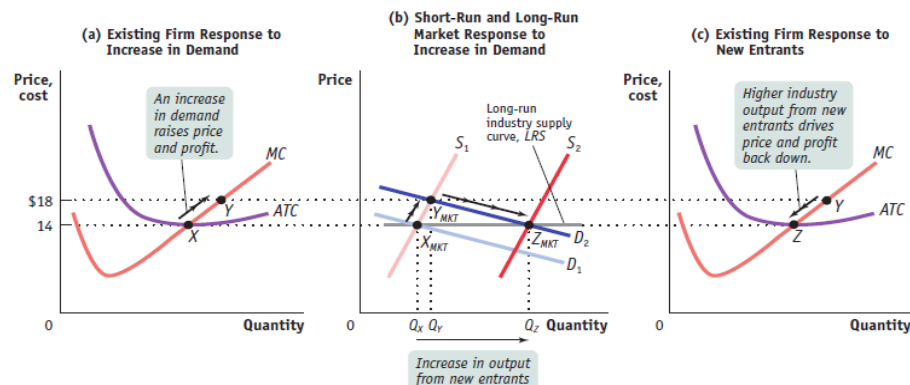## SECTION 11: Market Structures: Perfect Competition & Monopoly:

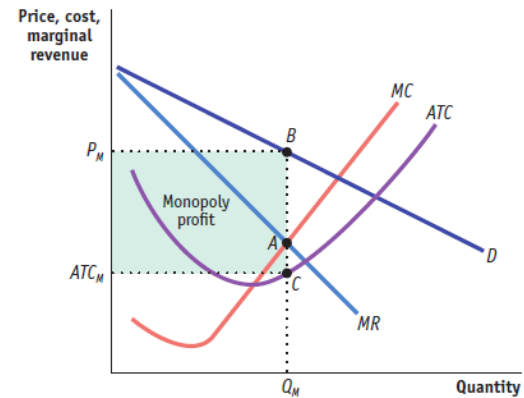**MONOPOLY**

A Monopolist's MR curve is below the D curve because the monopoly must lower price to sell more.
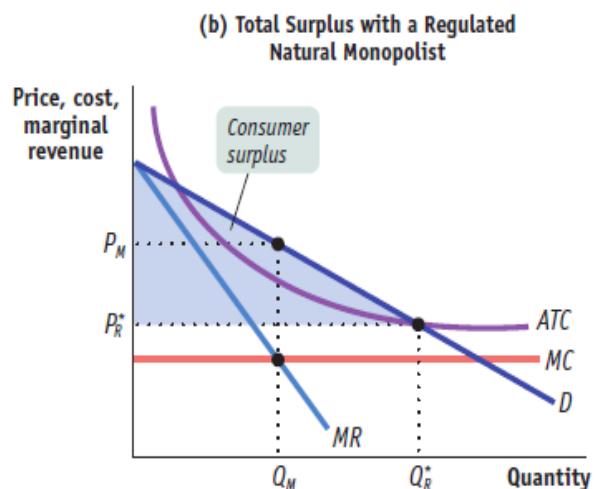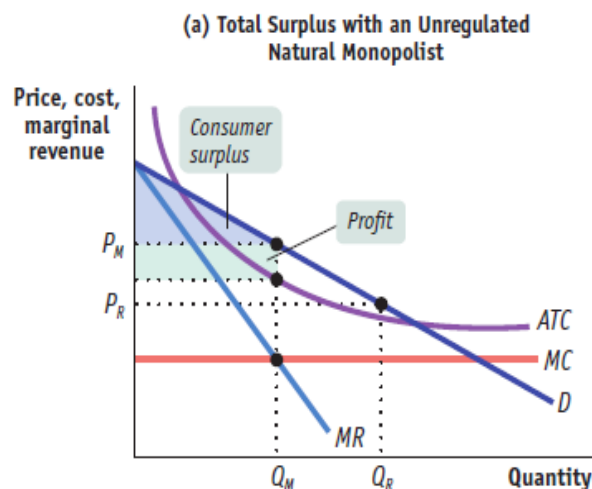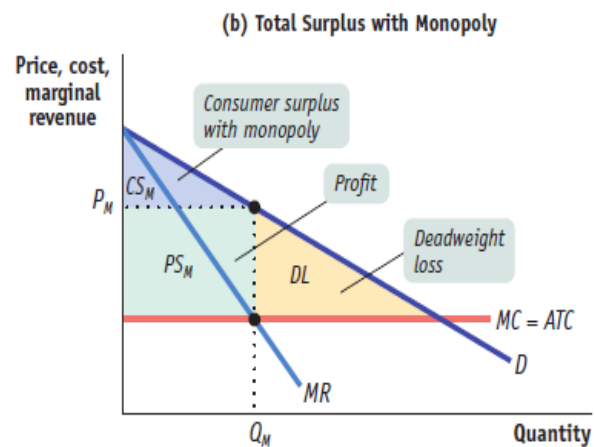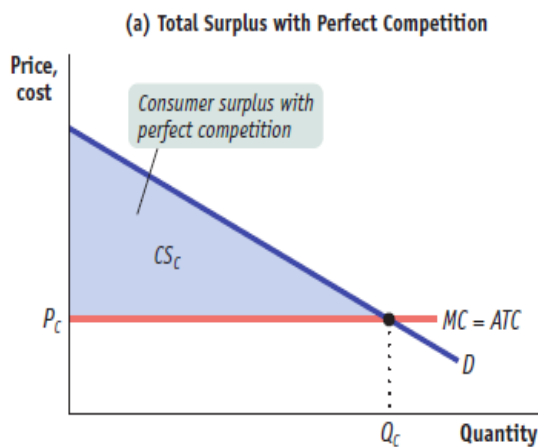

maximizes profit by producing the output level where
MC = MR *(point A on the graph; it finds its price at the point directly above the profit-maximization point, B)*

π= TR – TC
  = (Pm x Qm) – (ATCm x Qm)
  = (Pm – ATCm) x Qm

Monopolies create inefficiency P > MC

(a) Total Surplus with Perfect Competition

(b) Total Surplus with Monopoly

(a) Total Surplus with an Unregulated Natural Monopolist

(b) Total Surplus with a Regulated Natural Monopolist

SECTION 11: Market Structures: Perfect Competition & Monopoly:

Why would one group of consumers willingly pay a high price for a product, while a second group of consumers is willing to pay a much lower price for the same product?
The first group has a lower price elasticity of demand.

Perfect price discrimination: each consumer is charged exactly his/her maximum willingness to pay (last unit is sold where P=MC, there exists no deadweight loss)

(a) Price Discrimination with Two Different Prices

Price, cost

P_{high}

P_{low}

Profit with two prices

MC

D

Quantity

Sales to consumers with a high willingness to pay

Sales to consumers with a low willingness to pay

(c) Perfect Price Discrimination

Price, cost

Profit with perfect price discrimination

MC

D

Quantity