

Intro to Economic Analysis: Microeconomics

EC 201 - Day 19 Slides

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Department of Economics - University of Oregon

29 November 2021

Logistics

- ▶ Homework 7 due tonight (Nov 29) at 11:59pm
- ▶ Homework 8 due next Monday (Monday of finals week, Dec 6th at 11:59pm)
- ▶ Comprehensive final exam on December 9th at 2:45pm – the exam will last for 2 hours

How does a Monopolist Differ from a PC Producer?

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- ▶ High barriers to entry

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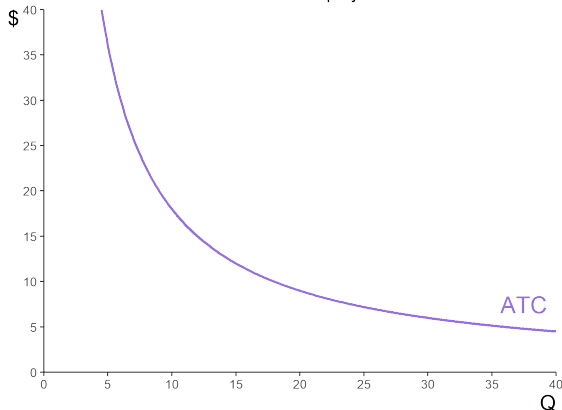
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- ▶ In my opinion, property rights usually takes the form of the other two

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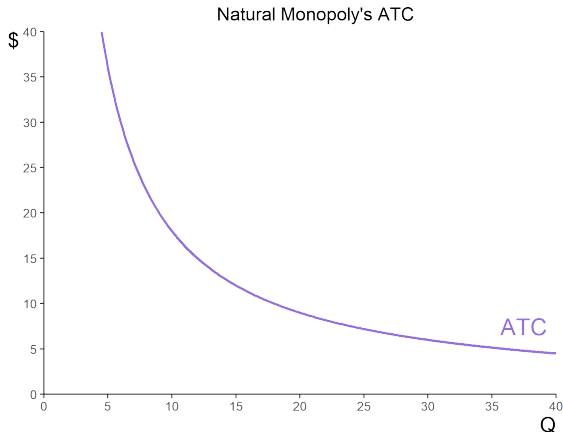
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Natural Monopoly's ATC



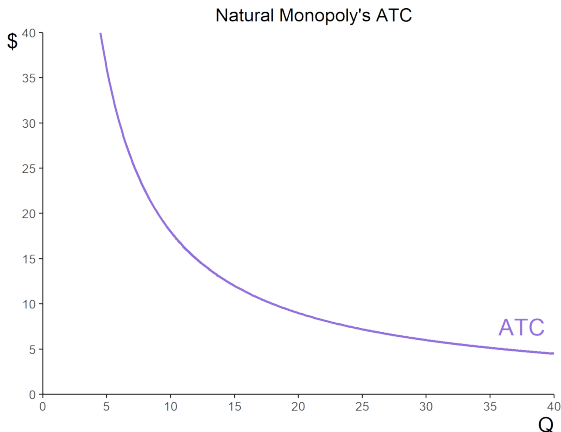
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- Eventually, we might expect this curve to go back up, for very high levels of Q

Natural Monopoly



- Usually, this is just caused by extremely high fixed costs, and smaller/declining/more constant variable costs

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 - No. Why?
 - The firm now has the ability to change the price

Why $MR \neq P$ Under a Monopoly

- To understand why $MR \neq P$ in a monopoly, recall the notion of price vs quantity (or "output") effects:

Why $MR \neq P$ Under a Monopoly

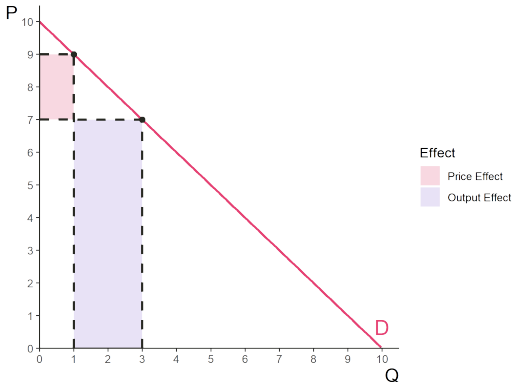
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 - Price Effect: When the firm produces more, it must sell for less, due to the law of demand; this decreases revenue

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 - Price Effect: When the firm produces more, it must sell for less, due to the law of demand; this decreases revenue
 - Output Effect: But the firm is also producing and selling more product, which raises revenue

Price/Output Effects

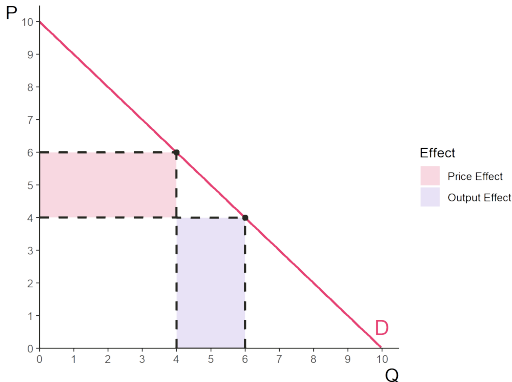
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Output Effect > price effect \implies increase in production/decrease in price will raise revenue

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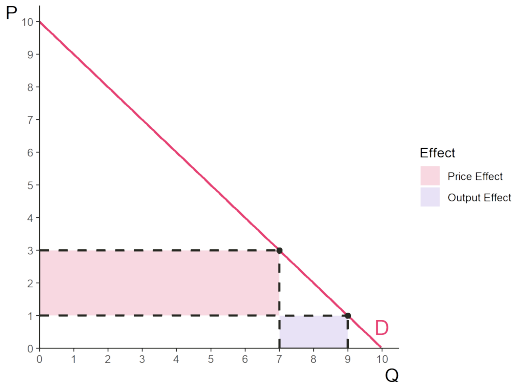
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 - But monopolists are able to charge more than their marginal cost
- ▶ But this begs the question: how does the monopolist choose price?

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 - I.e., Market demand

Demand in Monopoly vs PC

- Recall that last class, I made the argument that from the point of view of the individual PC firm, demand is perfectly flat

Demand in Monopoly vs PC

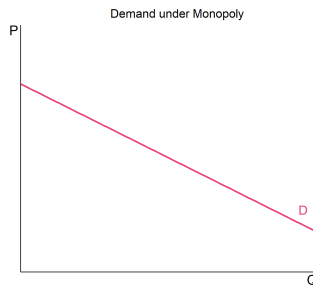
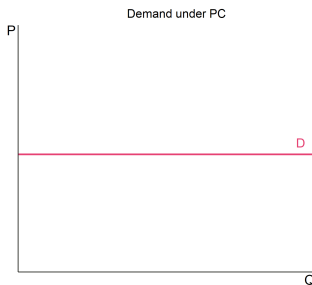
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- ▶ Since monopolists are price makers, and price according to demand, they face a normal, downward facing demand curve
- ▶ So, from the point of view of the firm, demand looks like:



MR Under A Monopoly

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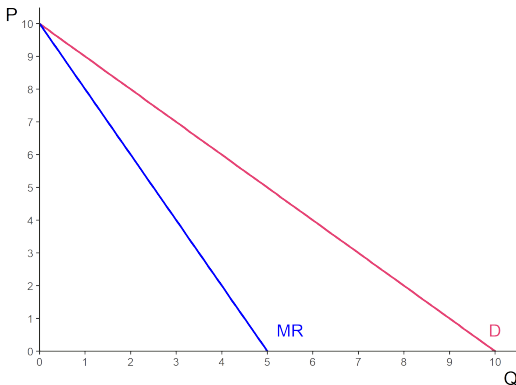
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 - Thus, we get the following result: *For a monopolist, MR is less than the current price of the good*
- ▶ In fact: Under a linear demand curve, MR for the monopolist is the same equation for demand, but with twice the slope¹

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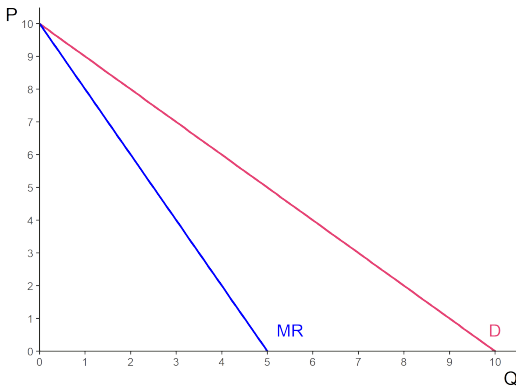
Demand and MR Under Monopoly

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- That is, the y -intercept is the same, the MR curve just has a slope that is twice as steep

Exercise: Find the Marginal Revenue Curve

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- ▶ Note that marginal revenue can be negative: this is the price effect overtaking the output effect

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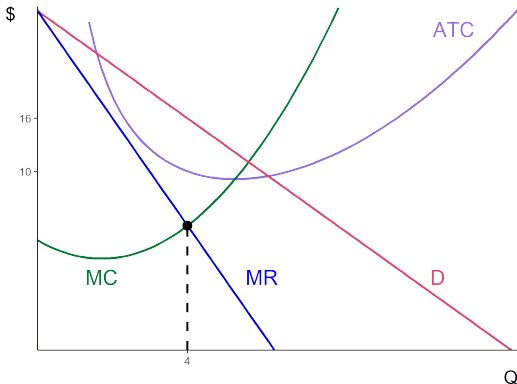
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- Does this change for the monopolist?
- No

Optimal Production for the Monopolist

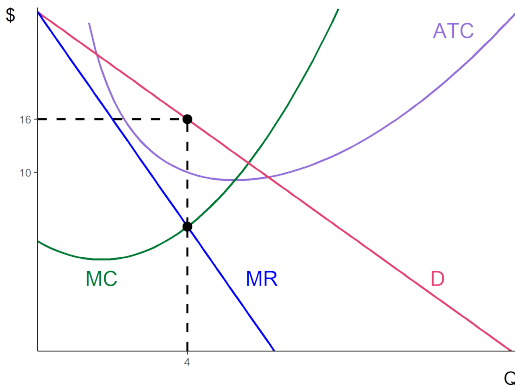
- To begin, the monopolist chooses to produce where $MR = MC$:



In this case, the monopolist produces 4 units

Price-Setting for the Monopolist

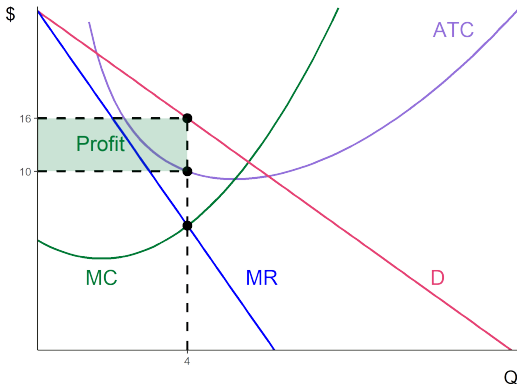
- The monopolist then charges a price according to the demand schedule, at the level they are producing at:



In this case, a price of \$16

Profit for the Monopolist

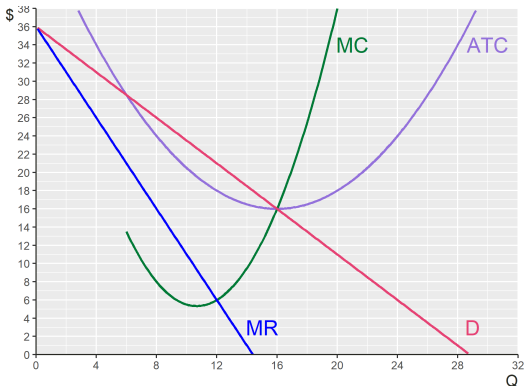
- The monopolist gets $\pi = (P - ATC) Q$:



In this case, a profit of $(16 - 10)(4) = \$24$

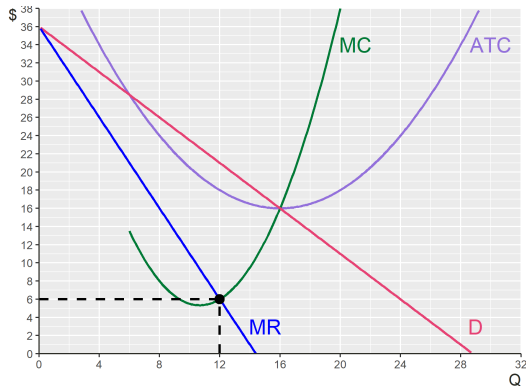
Exercise – Monopoly Problem

- Determine the optimal production, price-set, and profit by the monopolist. Also determine the marginal cost that the monopolist faces at their optimal level of production.



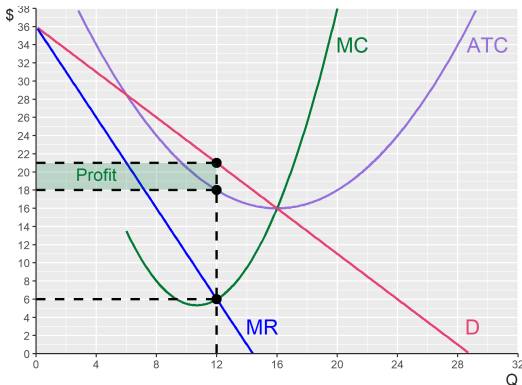
Solution – Monopoly Problem

- The monopolist makes 12 units, for a marginal cost of \$6



Solution – Monopoly Problem

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- The monopolist sets a price of \$21, and makes $(21 - 18)(12) = \$36$ in profit

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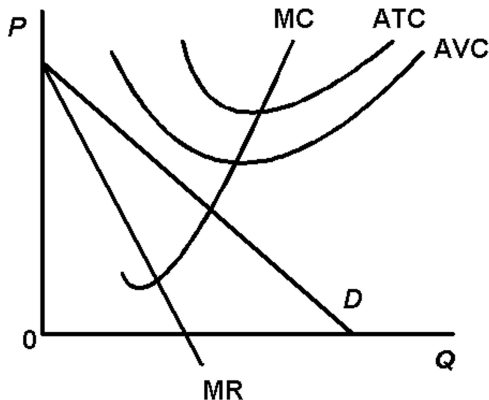
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- ▶ The following picture shows such an example when the monopolist will shut down

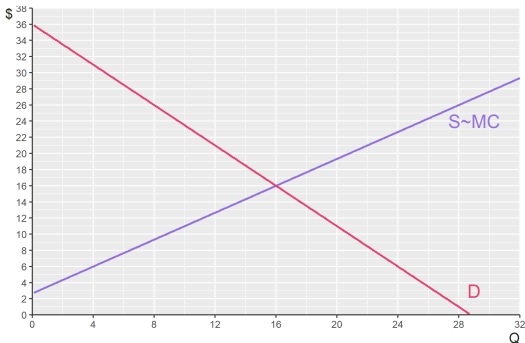
Shutdown for Monopoly, Visualized



- Of course, if demand at Q^* were in between AVC and ATC , the monopolist would operate at a loss in the short run

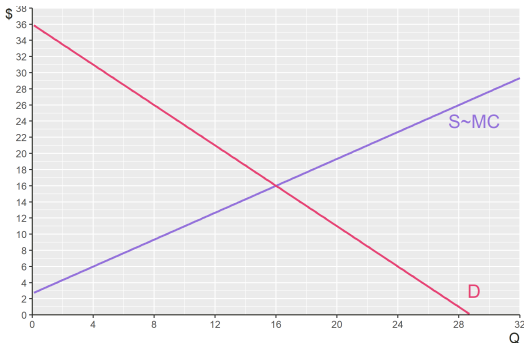
Optimal Production under PC

- Recall the case of perfect competition. Specifically, suppose we have identical perfectly competitive firms, such that the following is the market graph



Optimal Production under PC

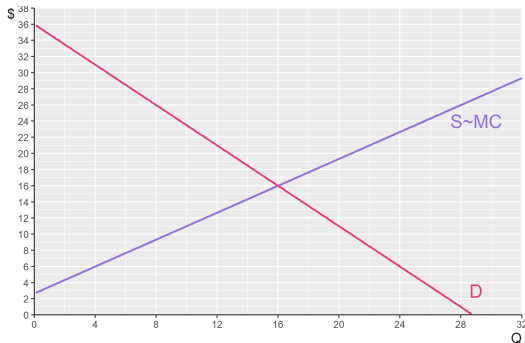
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- Short-run supply is a reflection of firms' marginal costs

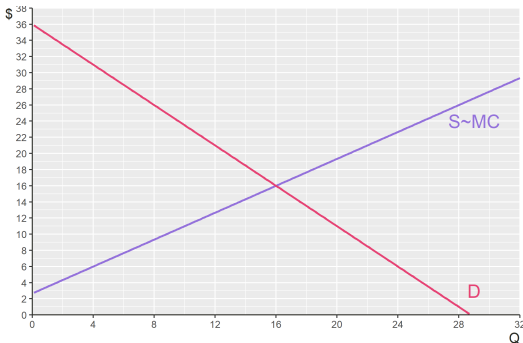
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- The firm is producing where $S = D$, with $Q^* = 16$ and $P^* = 16$ as well



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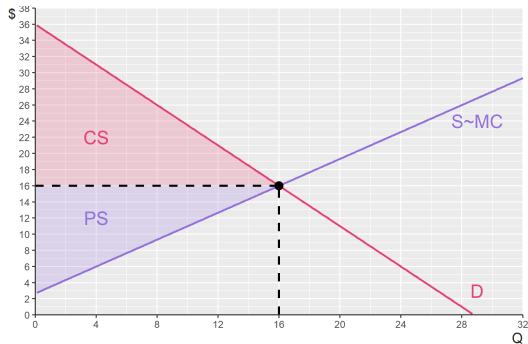
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- Recall that the PC firm is making 0 profit in the long run

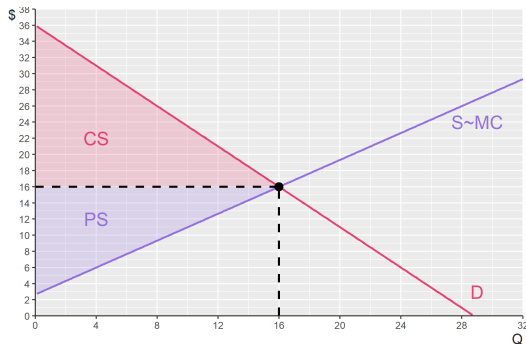
TS under PC

- Finally, TS is given by



TS under PC

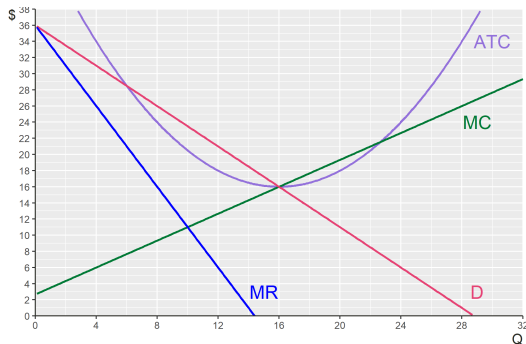
- Finally, TS is given by



- In this case, $TS = \frac{1}{2} (36 - 16) (16) + \frac{1}{2} (16 - \frac{8}{3}) (16) = 266.\bar{6}$

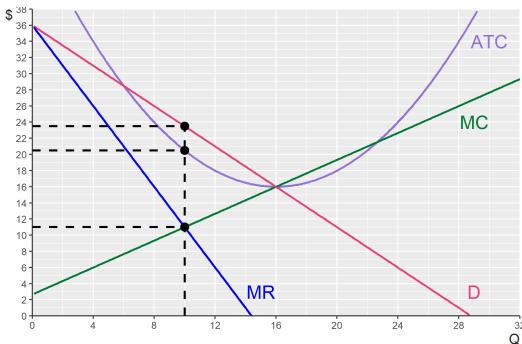
Optimal Production under Monopoly

- Now consider a monopoly with the same marginal cost curve, facing the same market demand curve:



Optimal Production under Monopoly

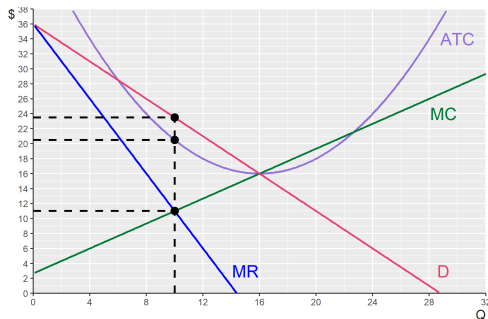
- Now consider a monopoly with the same marginal cost curve, facing the same market demand curve:



- In this case, the monopolist produces only $Q = 10$ units, but charges a higher price: $P = 23.5$

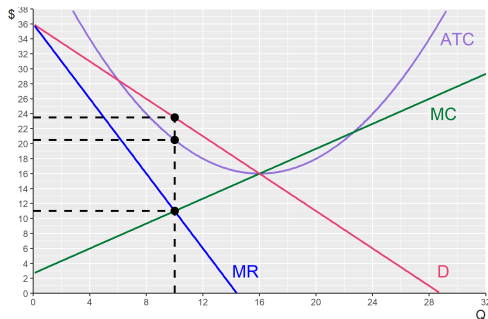
LR Profit under Monopoly

- Note that the monopolist earns $\pi = (23.5 - 20.5)(10) = \30



LR Profit under Monopoly

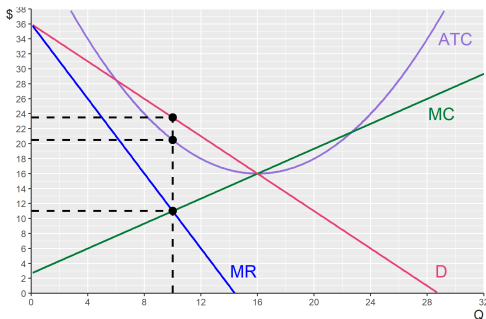
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- Remember, there are barriers to entry in a monopoly. Therefore, new entry by firms may not be possible (we will generally not consider this possible)

LR Profit under Monopoly

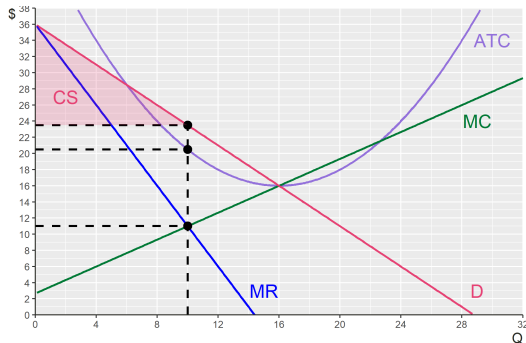
- Note that the monopolist earns $\pi = (23.5 - 20.5)(10) = \30



- Remember, there are barriers to entry in a monopoly. Therefore, new entry by firms may not be possible (we will generally not consider this possible)
- I.e., the monopolist makes positive profit, even in the long run

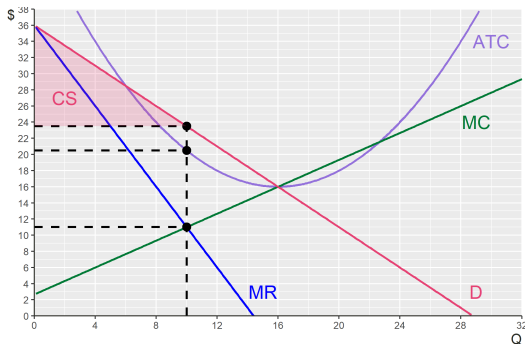
CS under Monopoly

- Remember: CS is the difference between what willingness to pay, and what consumers actually pay:



CS under Monopoly

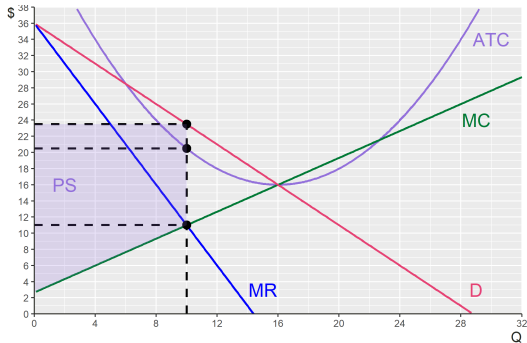
- Remember: CS is the difference between what willingness to pay, and what consumers actually pay:



- In this case, $CS = \frac{1}{2} (36 - 23.5) (10) = 62.5$

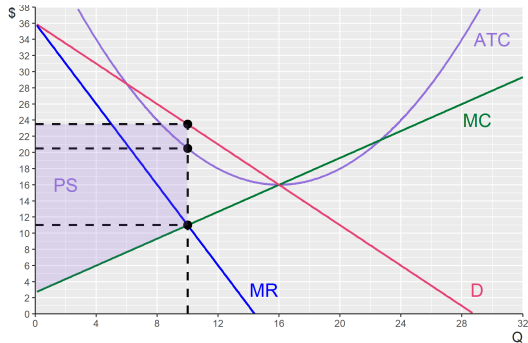
PS under Monopoly

- Even though we do not have a "supply" curve for the monopolist, we will pretend that *MC* works just as well



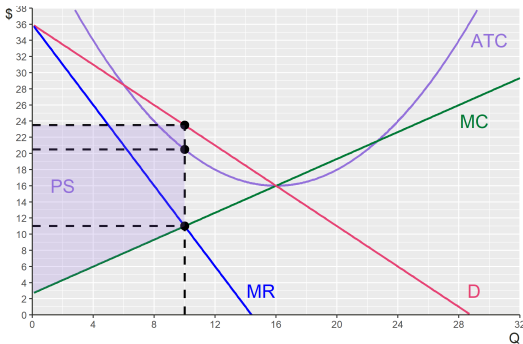
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 - Given a demand and thereby a MR curve, MC is a reflection of willingness to accept, so this is fine



- ▶ PS, the difference between price received and WTA, is given by
$$PS = (23.5 - 11)(10) + \frac{1}{2} \left(11 - \frac{8}{3} \right) (10) = 166.\bar{6}$$

TS under Monopoly

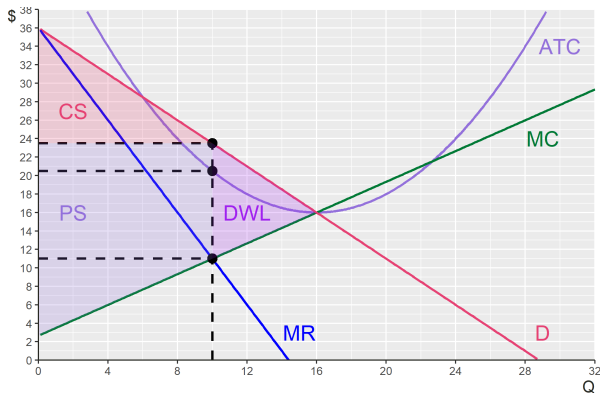
- Therefore, TS under monopoly is given by $229.1\bar{6}$

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- ▶ Therefore, TS under monopoly is given by $229.1\bar{6}$
- ▶ Under PC, it was $266.\bar{6}$

TS under Monopoly

- Therefore, TS under monopoly is given by $229.1\bar{6}$
- Under PC, it was $266.\bar{6}$
- Thus, we have the following DWL under a monopoly:



Summary of Monopoly vs PC

- Under both monopoly and PC, firms produce at $MR = MC$

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- ▶ However, uniquely under PC, $P = MC$

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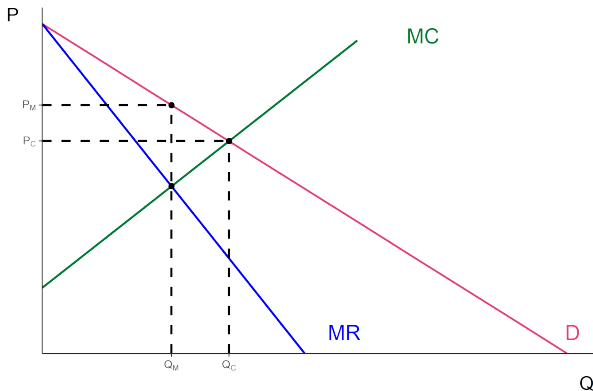
- ▶ Under both monopoly and PC, firms produce at $MR = MC$
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Summary of Monopoly vs PC

- ▶ Under both monopoly and PC, firms produce at $MR = MC$
- ▶ However, uniquely under PC, $P = MC$
- ▶ In the long run, PC firms make 0 profit, while monopolists make positive profit. Both of these facts are due to relative barriers to entry (free entry/exit)
- ▶ Under a monopoly, firms produce less than the efficient amount and are charged higher, leading to DWL

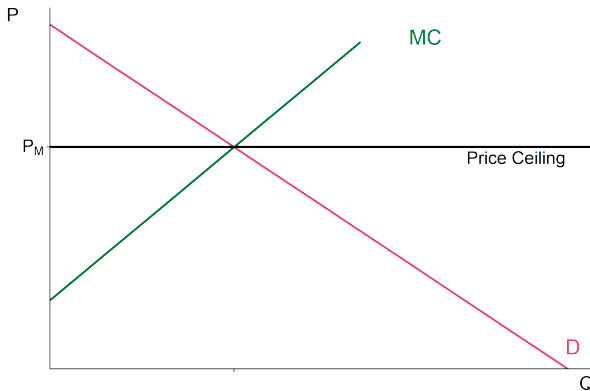
Bonus Question

- Could a price ceiling eliminate the DWL caused by a monopoly?



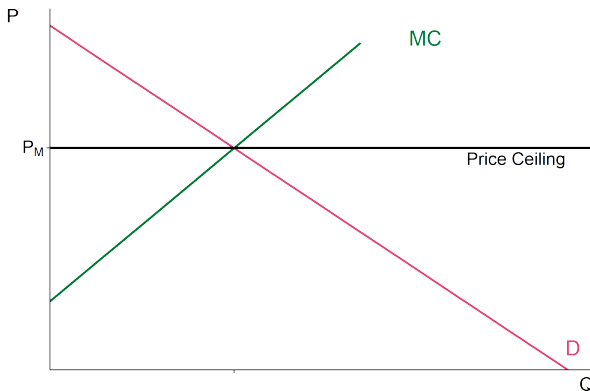
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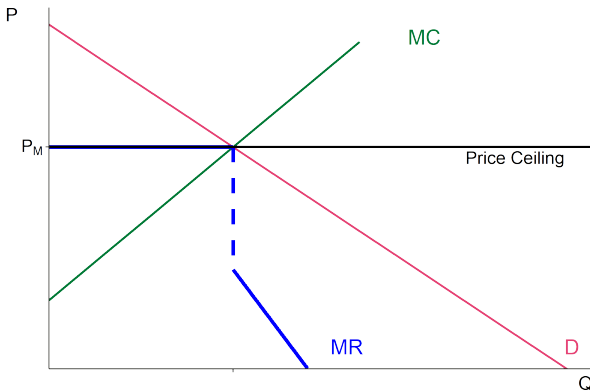
- Recall: the price must be below the ceiling



- What is marginal revenue in this case?

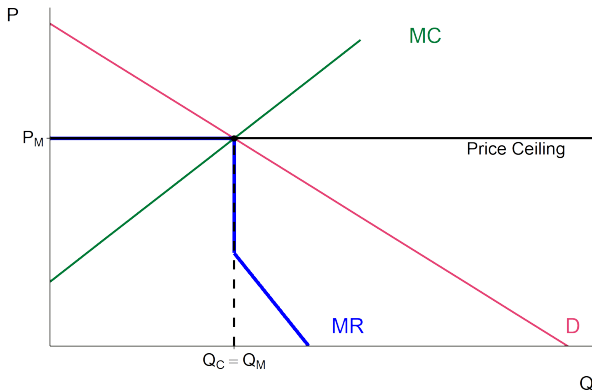
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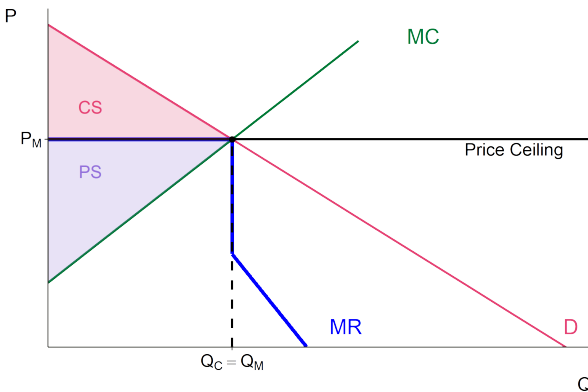
- So where does the firm produce?



- The firm produces where $MR = MC$, and wants to charge as high of price as possible. So they produce where MR intersects MC , and charges at the price ceiling

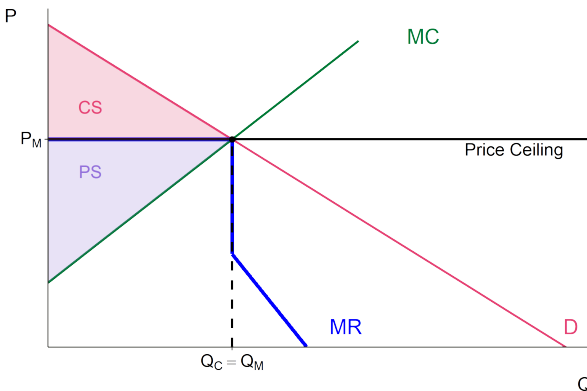
Bonus Question 1

- So, can a price ceiling eliminate the DWL in a monopoly?



Bonus Question 1

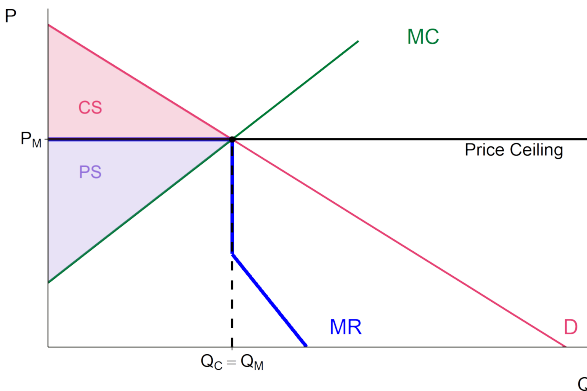
- So, can a price ceiling eliminate the DWL in a monopoly?



- A: yes. We are producing at the efficient (competitive) quantity and charging the efficient price

Bonus Question 1

- So, can a price ceiling eliminate the DWL in a monopoly?



- A: yes. We are producing at the efficient (competitive) quantity and charging the efficient price
 - Can a tax? Think about it.

Summary of Monopolies

- ▶ Read about price discrimination section on your own (15-4b)
- ▶ Homework 7 due tonight, homework 8 due Monday of Final's week
- ▶ Wednesday Lecture
- ▶ Discussion Section this week
- ▶ Final exam on Thursday, December 9th, at 2:45pm. The exam is 2 hours.