

# Elements of Macroeconomics TA

## Session 1:

### Introduction and Textbook Appendix

### Chapter 1

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# Introduction

- TA: Haruki Shibuya, a 3<sup>rd</sup>-year JHU Economics Ph.D. student
- 27 y.o., from Japan. Univ. of Tokyo, Kyoto Univ. alumnus
- Who is a TA (teaching assistant)? My role includes: holding approx. 10 TA sessions + weekly TA office hours and grading exams, etc.
- What are TA sessions? They are mini-lectures/discussion sessions to give students supplemental info and to review homework.
- What are TA office hours? In TA office hours, the TA is available to answer/discuss questions. (time: to be announced)

# Introduction

- You have approx. one assignment for each chapter in the course
- Submission means full marks. But...
- you have 3 midterm exams and 1 final exam
- Exams will be mostly based on homework, so review them carefully

# Introduction

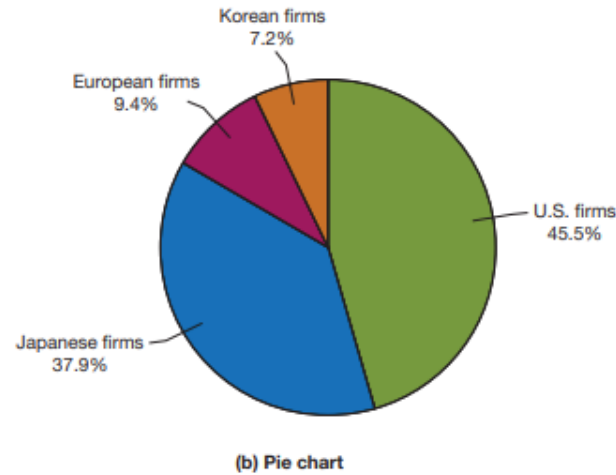
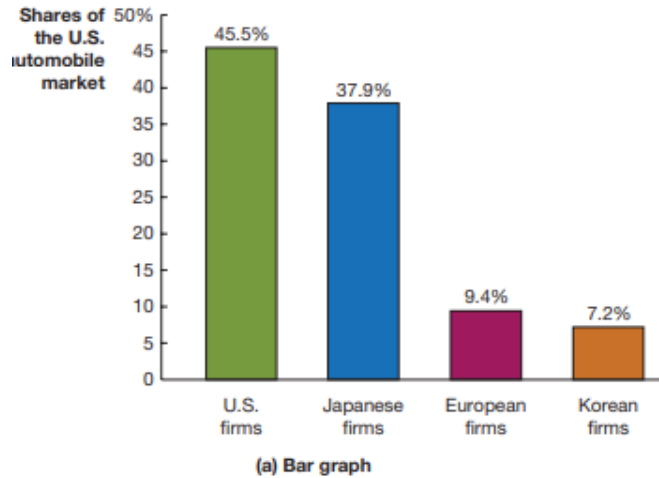
- What is macroeconomics?
- Macroeconomics focuses on the behavior of overall economy, e.g., GDP, inflation, interest rates, foreign exchange rates, balance of payments.
- Often compared with microeconomics, whose focus is more on individuals
- But the boundary is not so clear (cf. microfoundations)
- Read syllabus/materials to get more ideas

# Textbook appendix chapter 1

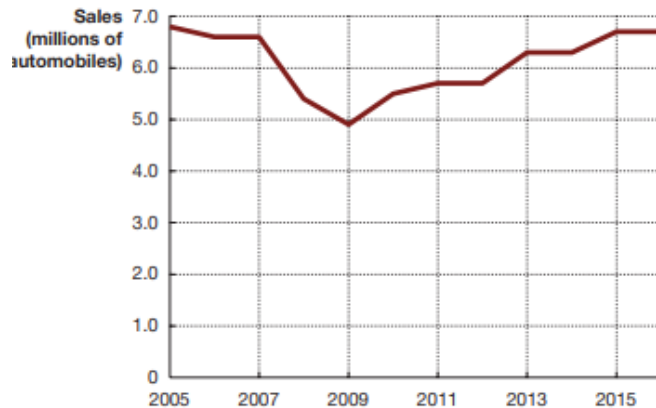


- Today we discuss appendix Ch 1 of the textbook
- With some additional info
  
- 1. Graphs
- 2. Demand curve

# Graphs

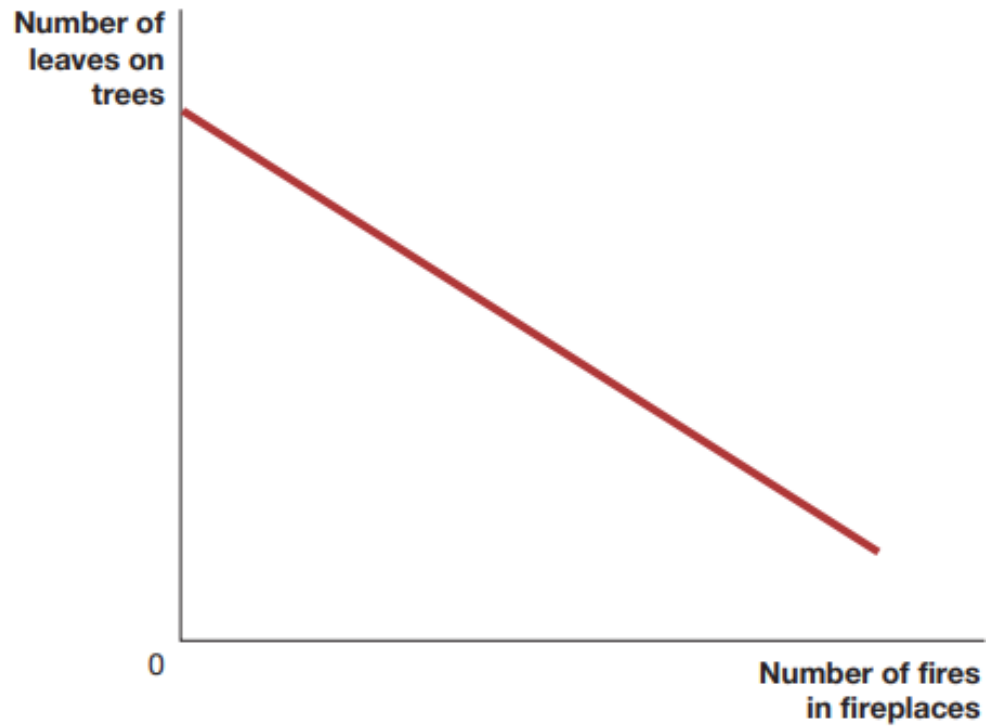


- There are many types of graphs
- Point: choose appropriate one
- Don't get fooled by how it looks like
- Don't fool others/yourself

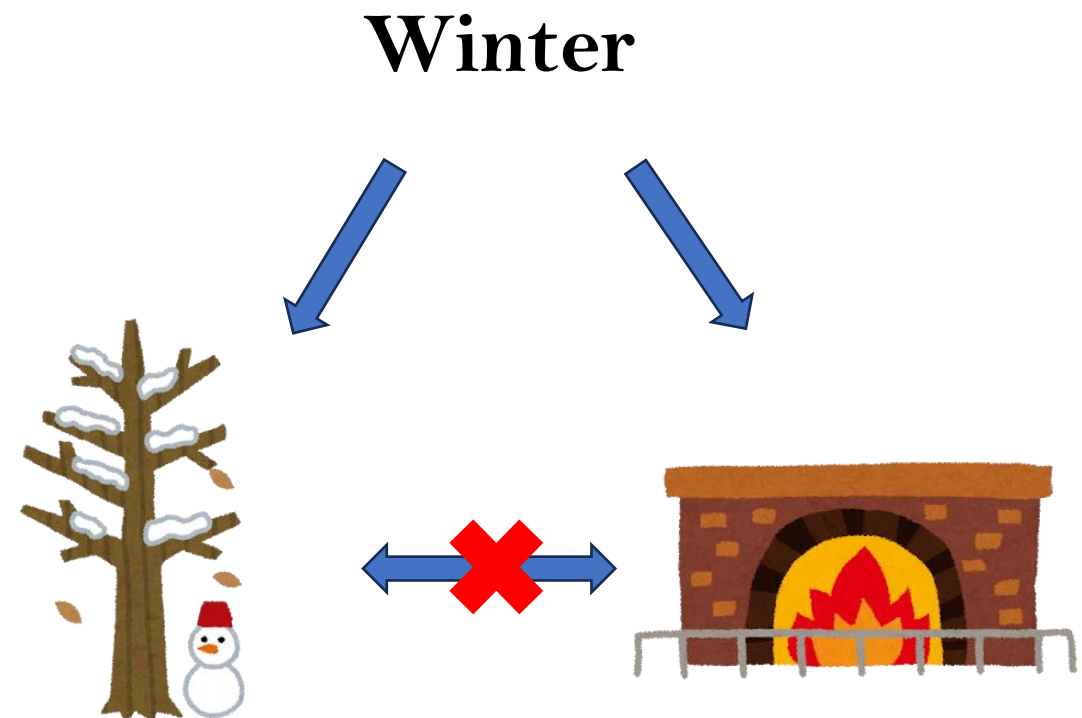


The slashes (/) indicate that the scale on the vertical axis is truncated, which means that some numbers are omitted. The numbers on the vertical axis jump from 0 to 4.5.

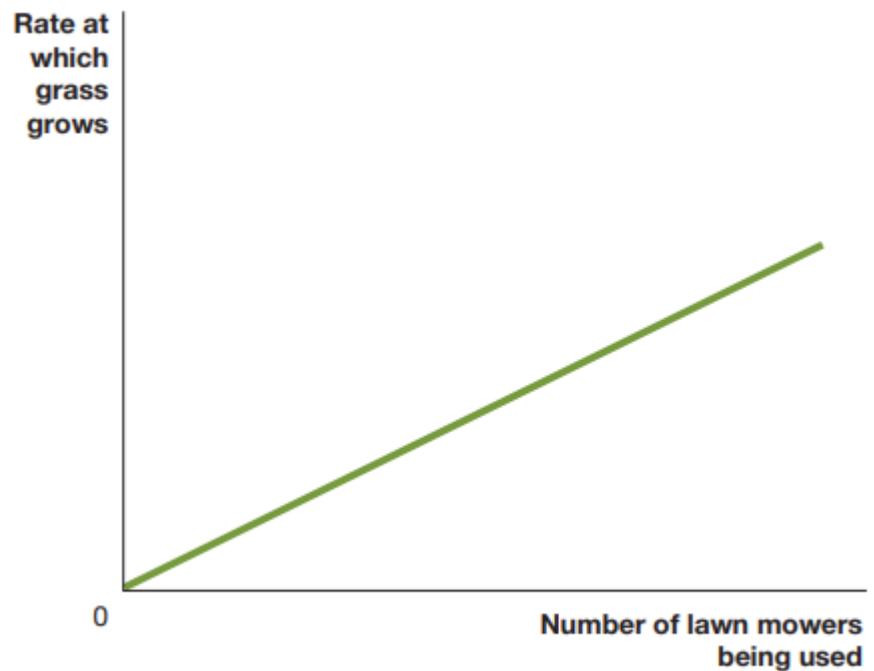
# Correlation $\neq$ causation



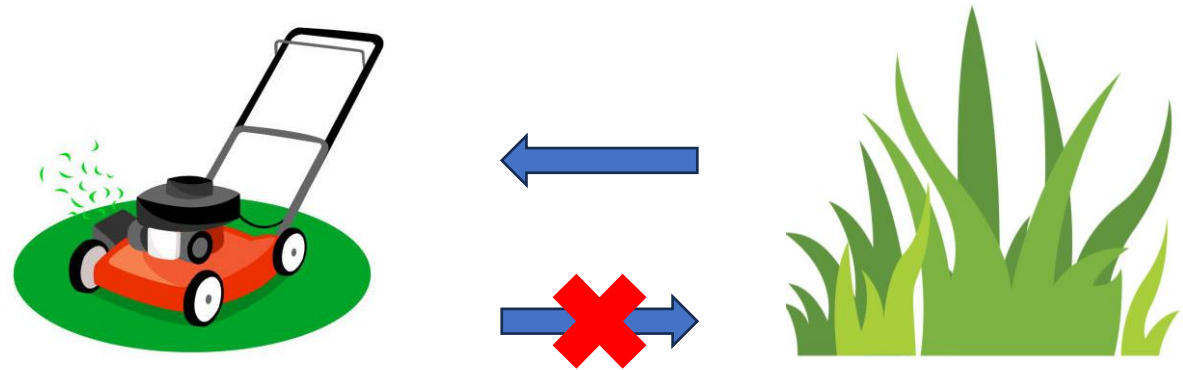
(a) Problem of omitted variables



# Correlation $\neq$ causation



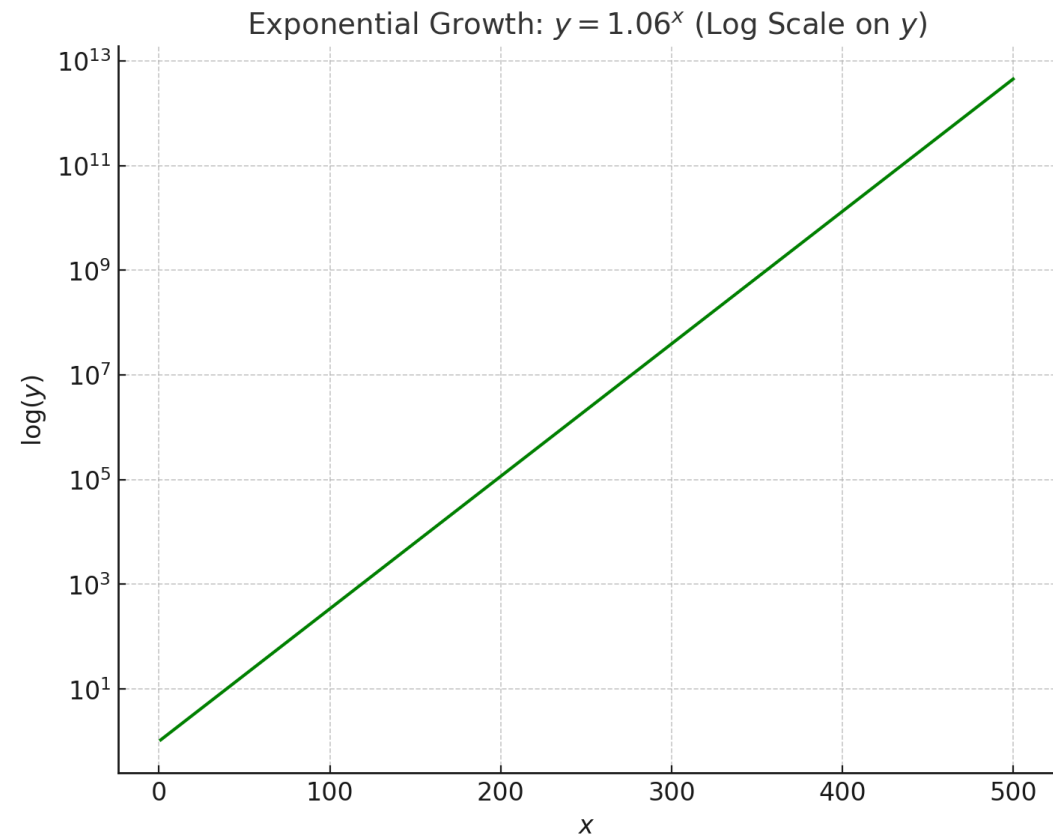
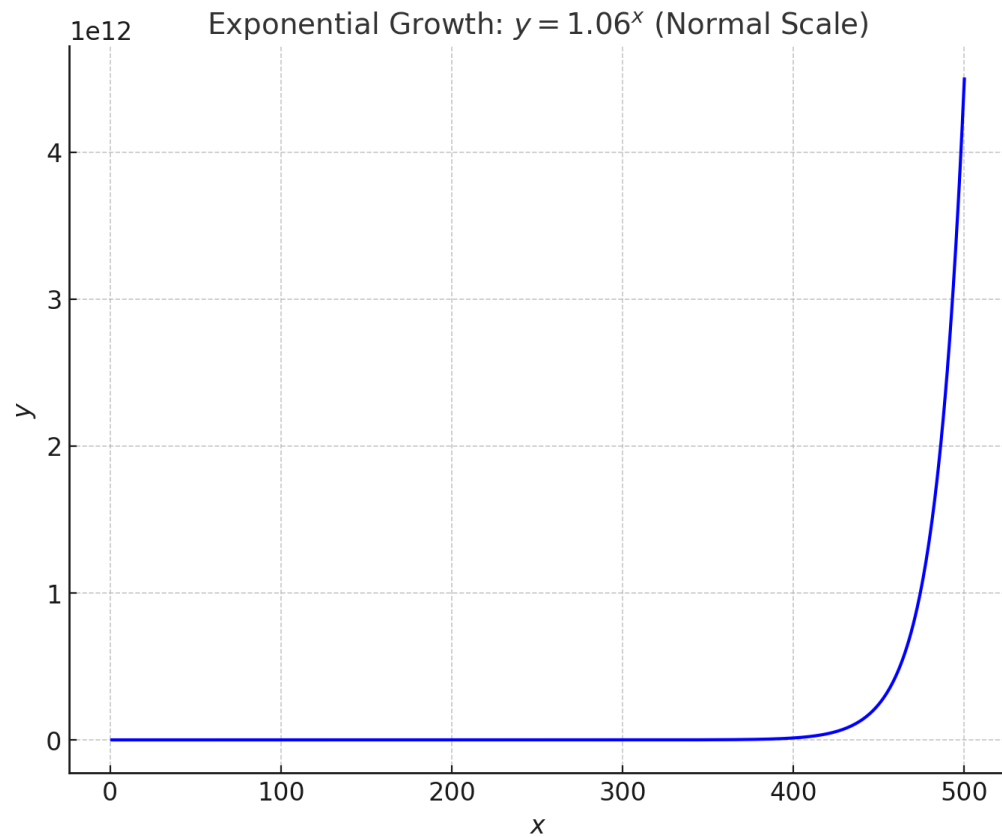
(b) Problem of reverse causality





# Graphs

## ■ Useful tool: log scaling



# Graphs

## S&P 500 Index - 90 Year Historical Chart (inflation-adjusted)

Normal Scale

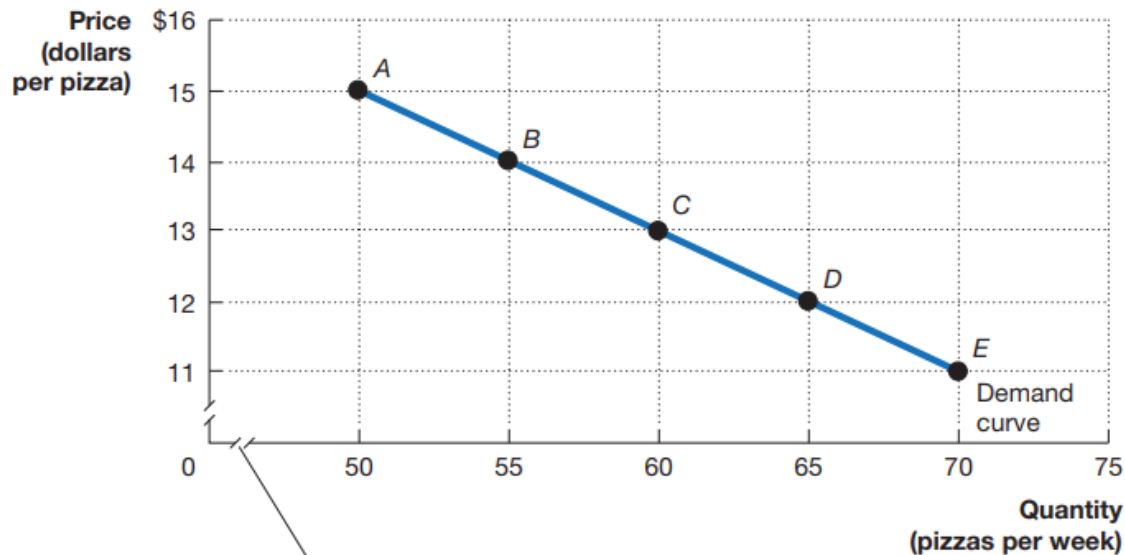


Log Scale



# Demand curve

Price (dollars per pizza)	Quantity (pizzas per week)	Point
\$15	50	A
14	55	B
13	60	C
12	65	D
11	70	E

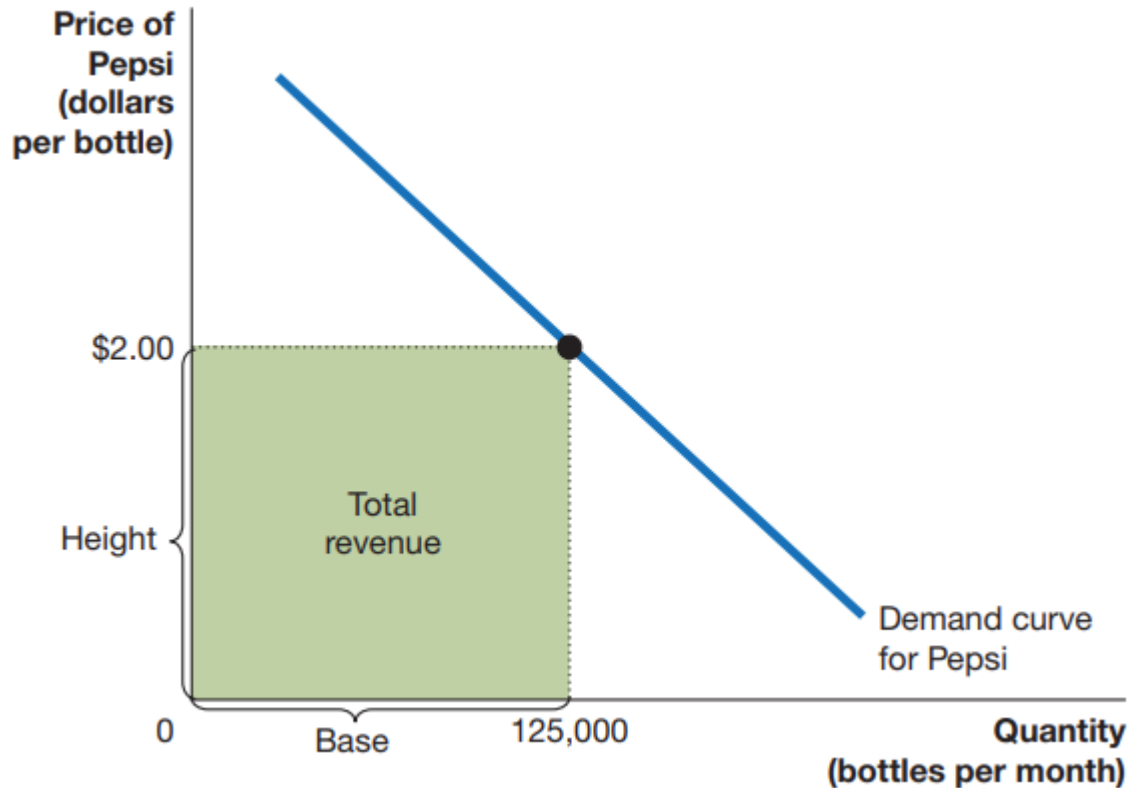


As you learned in Figure 1A.2, the slashes (/) indicate that the scales on the axes are truncated, which means that numbers are omitted: On the horizontal axis numbers jump from 0 to 50, and on the vertical axis numbers jump from 0 to 11.

- Demand curve: shows price-quantity relationship for consumers in a particular market
- We often write as  $q = D(p)$
- E.g.,  $q = D(p) = -p/5 + 25$
- Slope =  $-1/5$

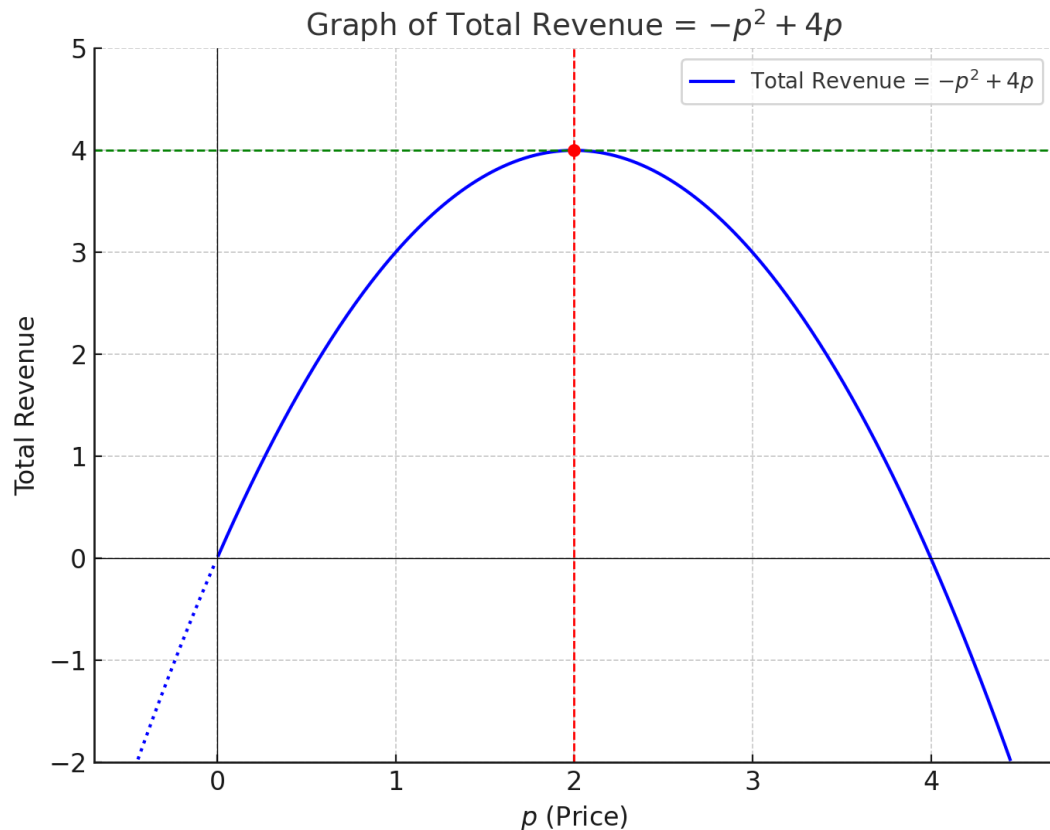
$$\text{Slope} = \frac{\text{Change in value on the vertical axis}}{\text{Change in value on the horizontal axis}}$$

# Demand curve



- Assume Pepsi can choose the price and consumers just accept it (monopolistic situation)
- Total revenue = price  $\times$  quantity
- E.g., if  $q = D(p) = -p + 4$ , then
- $TR = p \times q = -p^2 + 4p$

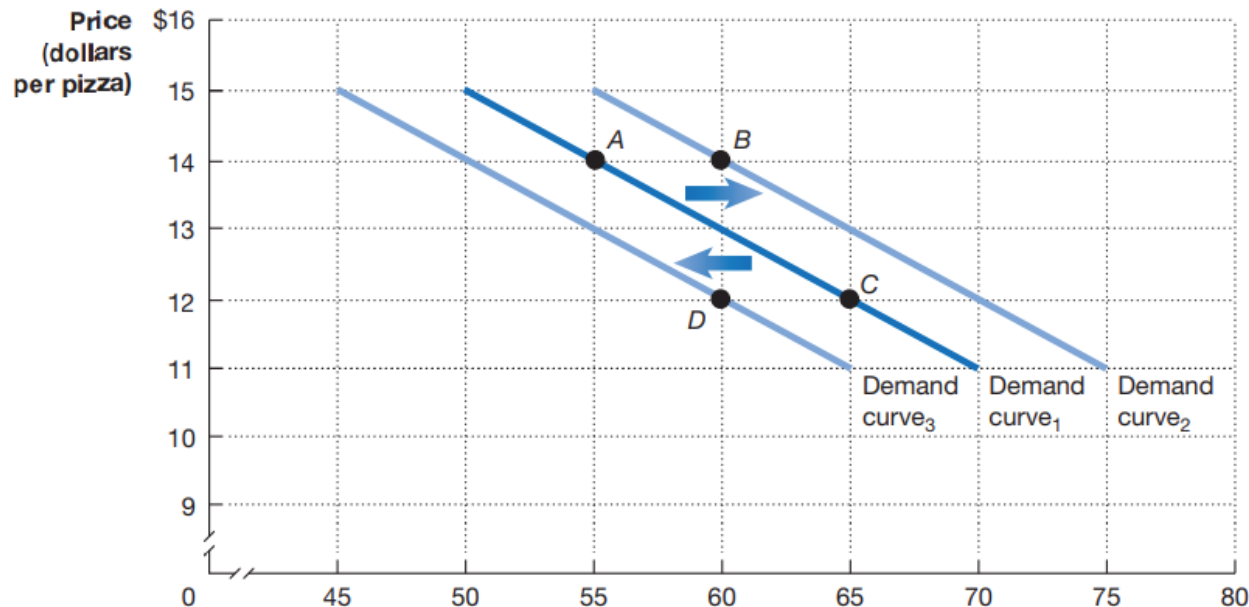
# Demand curve



- Assume Pepsi can choose the price and consumers just accept it (monopolistic situation)
- Total revenue = price  $\times$  quantity
- E.g., if  $q = D(p) = -p+4$ , then
- $TR = p \times q = -p^2 + 4p$
- $\dots = -(p-2)^2 + 4$
- $p = 2$  gives the max revenue

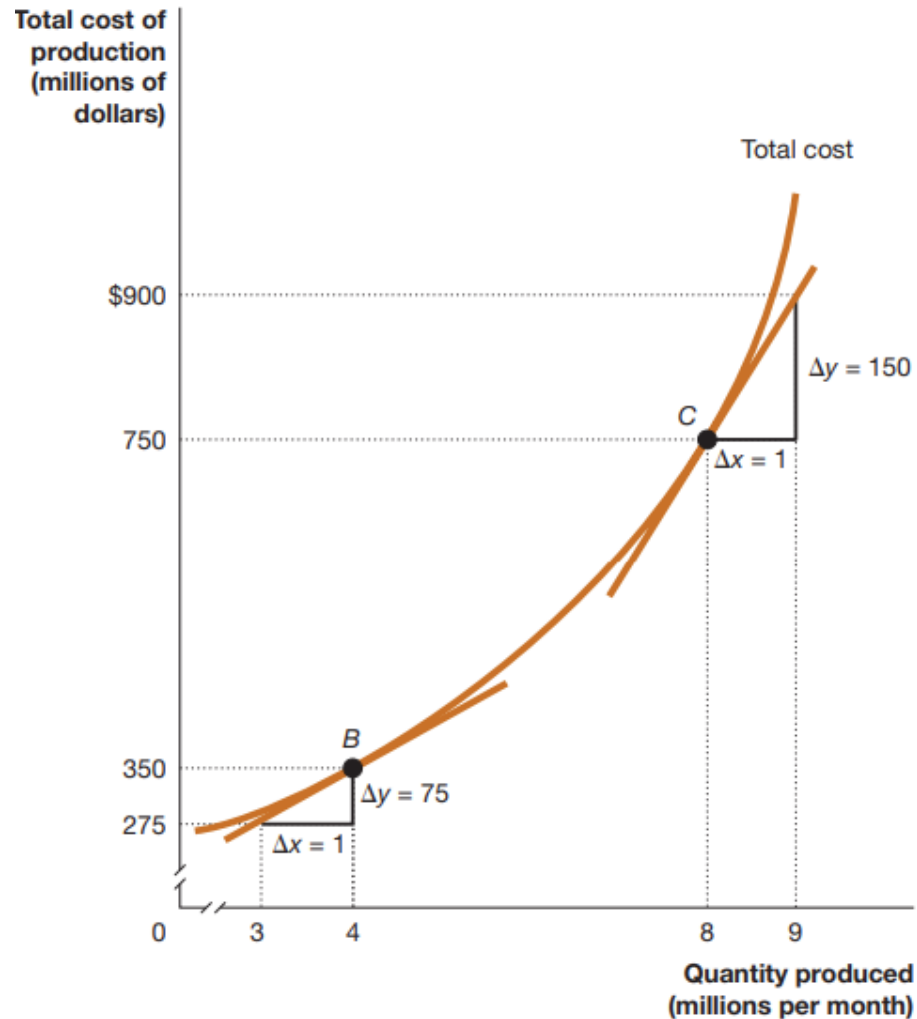
# Demand curve shifts

Price (dollars per pizza)	Quantity (pizzas per week)		
	When the Price of Hamburgers = \$1.00	When the Price of Hamburgers = \$1.50	When the Price of Hamburgers = \$2.00
\$15	45	50	55
14	50	55	60
13	55	60	65
12	60	65	70
11	65	70	75



- Demand curve can shift when an external variable changes
- E.g., pizzas being more popular when hamburgers are more expensive (they are substitutes)
- The demand curve shifts rightward
- Note that a point moving on the curve  $\neq$  a shift of the curve itself

# Some formulae



- Recall:

$$\text{Slope} = \frac{\text{Change in value on the vertical axis}}{\text{Change in value on the horizontal axis}}$$

- But how about the slope of a curve?
- slope of a curve = the slope of the tangent line
- Cf. differential coefficient

# Some formulae

■ Percentage change example: 
$$\left( \frac{\text{GDP}_{2016} - \text{GDP}_{2015}}{\text{GDP}_{2015}} \right) \times 100$$

■ Cf. ‘annualized’ growth rate, YoY, and QoQ

