

Economics 102  
 Spring 2017  
 April 11, 2017  
 First Midterm

Name \_\_\_\_\_  
 TA Name \_\_\_\_\_  
 Discussion Section # \_\_\_\_\_  
 Student ID # \_\_\_\_\_

*ANNOTATED KEY*

**Version 1**

**DO NOT BEGIN WORKING UNTIL THE INSTRUCTOR TELLS YOU TO DO SO.  
 READ THESE INSTRUCTIONS FIRST.**

You have 75 minutes to complete the exam, **including filling in your scantron**. The exam consists of **10 binary choice questions worth 1.5 points each** and **20 multiple choice questions worth 3 points each** for a **total of 75 points**. Please accurately and completely provide your **name, ID number, discussion section number, version number, and TA name** on the scantron sheet and the exam booklet. Answer all questions on the scantron sheet with a #2 pencil. There are 14 printed pages in this exam, including this cover sheet. **DO NOT PULL THE EXAM APART OR REMOVE THE STAPLE.**

**WARNING: NO COMMUNICATION OR CALCULATING DEVICES, OR FORMULA SHEETS ARE ALLOWED. NO CONSULTATION AND CONVERSATION WITH OTHERS ARE ALLOWED WHILE YOU ARE TAKING THE EXAM OR IN THE EXAM ROOM. ACADEMIC MISCONDUCT IS A SERIOUS OFFENSE AND PUNISHABLE TO THE FULLEST EXTENT.**  
**PICK THE BEST ANSWER FOR EACH QUESTION.**

**How to fill in the scantron sheet and other information:**

1. Print your last name, first name, and middle initial in the spaces marked "Last Name," "First Name," and "MI." Fill in the corresponding bubbles below.
  2. Print your student ID number in the space marked "Identification Number." Fill in the bubbles.
  3. Write **the number of the discussion section you've been attending under "Special Codes" spaces ABC**, and fill in the bubbles. The discussion numbers can be found at the bottom of this page.
  4. Write the version number of your exam booklet under "Special Codes" space D, and fill in the bubble. The version number is at the top of this page.
- **If there is an error on the exam or you do not understand something, make a note on your exam booklet and the issue will be addressed AFTER the examination is complete. No questions regarding the exam can be addressed while the exam is being administered.**
  - **When you are finished, please get up quietly and bring your scantron sheet and this exam booklet to the place indicated by the instructors.**

Rosemary Kaiser	Sam Engle	Iuliia Dudareva	Yu-chi Chu
<b>352</b> Fr 8:50 AM Ingraham 122	<b>354</b> Fri 8:50 AM Ingraham 224	<b>331</b> Fri 9:55 AM Van Vleck B131	<b>350</b> Fri 9:55 AM VanVleck B305
<b>355</b> Fri 9:55 AM Van Hise 491	<b>332</b> Fri 11:00 AM Van Hise 367	<b>353</b> Fri 11:00 AM Van Vleck B131	<b>351</b> Fri 11:00 AM VanVleck B129
<b>359</b> Fri 1:20 PM INGRAHAM 115	<b>357</b> Fri 12:05 PM STERLING 2323	<b>358</b> Fri 12:05 PM Van Vleck B219	
<b>328</b> Fri 2:25 PM SSCI 6322	<b>326</b> Fri 1:20 PM INGRAHAM	<b>329</b> Fri 2:25 PM SSCI 4308	



I, \_\_\_\_\_, agree to neither give nor receive any help on this exam from others. I understand that the use of a calculator or communication device on this exam is academic misconduct. I also understand that providing answers to questions on this exam to other students is academic misconduct, as is taking or receiving answers to questions on this exam from other students. Thus, I will cover my answers and not expose my answers to other students. It is important to me to be a person of integrity and that means ALL ANSWERS on this exam are my answers. Any violation of these guidelines will result in a penalty of at least receiving a zero on this exam.

Signed \_\_\_\_\_

**Binary Choice (10 questions worth 1.5 points each)**

- Definition*
- Which statement best describes the reason for the equivalence of the income approach and the expenditure approach in computing GDP?
    - The more income you earn, the more income you spend. → *You might not spend all your income - you might save some of it*
    - One person's spending is another person's income.



*Spending = income*  
 ↳ basic concept of circular flow diagram

- EASY*
- If Jim buys eggs for \$0.50 apiece and bacon for \$1 apiece, and sells his "breakfast special" of 2 eggs and 2 pieces of bacon for \$6, how much is Jim adding to GDP?

- \$3
- \$6

*Cost of inputs 2(50¢) + 2(\$1) = \$3*  
*Breakfast Price - Cost of inputs = Value Added*  
 \$6 - \$3 = \$3

- Not too hard!*
- It is a possible scenario that the number of people working and the unemployment rate both rise simultaneously.

- True
- False

$$\frac{U}{U+E} (100\%) = \text{Unempl. rate}$$

*U = 10*  
*E = 90* } ⇒  $\frac{10}{100} (100\%) = 10\%$

*U' = 20*  
*E' = 100* } ⇒  $\frac{20}{120} (100\%) = 16.67\% \approx 17\%$

- Not hard - a logic exercise*
- Suppose you know the number of people in labor force does not change. It is a possible scenario that the number of people working and the unemployment rate both rise simultaneously.

- True
- False

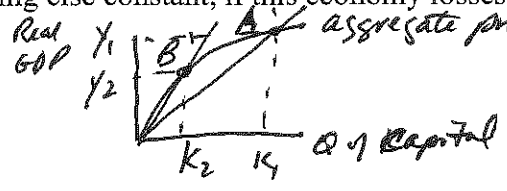
*U + E = constant*

*if E ↑ then U must ↓ ⇒ so this is a FALSE statement*



SOME ANALYSIS REQUIRED: NOT HARD

5. Suppose that an economy uses labor and capital for production. Initially 1000 workers and 1000 units of capital are employed, and the level of capital and technology available in this economy are fixed. Holding everything else constant, if this economy loses some of its capital, then:
- Capital productivity will rise.
  - Labor productivity will rise.



EASY

6. Assume that a country experiences a steady, positive rate of inflation over time. The CPI for 1983 using 1990 as the base year and a scale factor of 100 will be:
- Greater than 100.
  - Less than 100.

With inflation  $\Rightarrow$  CPI increase over time  $\Rightarrow$  this implies  $CPI_{1983} < CPI_{1990}$

DEFINITION: EASY

7. The CPI was originally determined by comparing the cost of a fixed basket of goods across time, because of this, the CPI originally \_\_\_\_\_ the cost of maintaining the same standard of living.
- Overestimated
  - Underestimated

$\hookrightarrow$  The issue of "substitution bias"

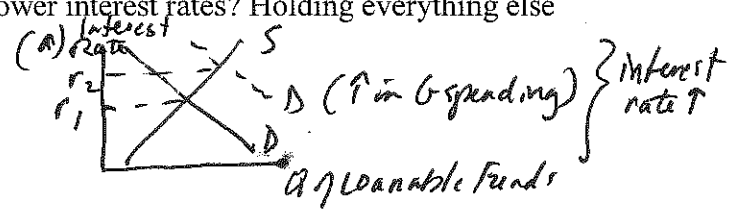
EASY

8. If a country's real GDP is rising by 3% per year while its population is rising at 4% per year. Then the country's standard living is \_\_\_\_\_
- Rising.
  - Falling.

$\frac{\text{real GDP}}{\text{pop}} = \text{GDP/capita} = \text{standard of living}$   
 if real GDP grows slower than population then GDP/person or GDP/capita must fall

A BIT HARDER

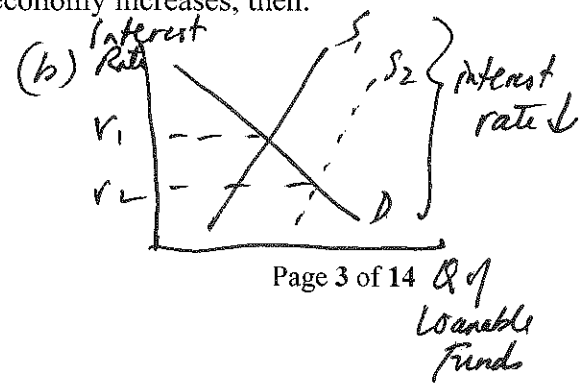
9. Which of these two policies would lead to lower interest rates? Holding everything else constant,
- An increase in government spending.
  - A reduction in taxes on interest income.



DEFINITIONAL

10. Holding everything else constant, if the GDP deflator in the economy increases, then:
- Nominal GDP decreases.
  - Real GDP decreases.

$\text{real value} = \frac{\text{nom value}}{\text{GDP deflator}}$  (scale)  
 $\text{GDP deflator } \uparrow \Rightarrow \text{real value } \downarrow$







**Multiple Choice (20 questions worth 3 points each)**

Use the following information to answer the following 3 questions.

Below is a table for a small, three-business economy:

	Elmo (chocolate)	Bert (sugar)	Ernie (cookies)
Inputs	\$10 (sugar) +2	\$0	\$20 (chocolate) +5 \$12 (sugar) +6
Wages	\$5 (Big Bird) +5	\$8 (Oscar)	\$8 (Cookie Monster)
Total Sales	\$35 +5	\$22 +6 +2	\$50 → 80

11. How much value does Bert's business add to the economy?

- a. \$14
- b. \$0
- c. \$22
- d. \$30

*Value from Bert's business = Total Sales - Cost of Input*  
 $= 22 - 0 = 22$

12. What is the GDP for this economy?

- a. \$170
- b. \$107
- c. \$65
- d. \$86

*VA Approach:*  
 $GDP = VA \text{ from Elmo} + VA \text{ from Bert} + VA \text{ from Ernie}$   
 $= (35 - 10) + (22 - 0) + (50 - 32)$   
 $= 25 + 22 + 18$   
 $= 65$

13. Ernie and the Cookie Monster realize that if Elmo can sell them \$5 more of chocolate and Bert can sell them \$6 more of sugar, they can sell \$80 of cookies a day. Bert can handle the extra output, but Elmo will need to hire another employee at \$5 a day to keep up and buy \$2 more of sugar from Bert. What is the change in GDP if these changes are made?

- a. GDP decreases by \$15.
- b. GDP increases by \$30.
- c. GDP increases by \$80.
- d. GDP doesn't change.

*new GDP = VA from Elmo' + VA from Bert' + VA from Ernie*  
 $new\ GDP = (40 - 12) + (30 - 0) + (80 - 43)$   
 $new\ GDP = 28 + 30 + 37$   
 $new\ GDP = 95$   
 $\Delta GDP = new\ GDP - old\ GDP$   
 $\Delta GDP = 95 - 65 = 30!$





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120,000 new college graduates  $\Rightarrow$  60,000 E at  $\geq 22,000$ /month  
 30,000 E part-time  $< 22,000$ /month  
 Ahead of 2009  
 5,000 give up looking  $\leftarrow$  10,000 actively  $\Rightarrow$  U for job  $\geq 25,000$ /month  
 5,000 give up looking  $\leftarrow$  10,000 actively  $\Rightarrow$  U for job  $\leq 20,000$ /month  
 10,000 rich parents  $\Rightarrow$  not working  
 120,000 college graduates in 2009

14. U rate =  $\frac{U}{U+E}$  (100%)  
 end of 2009  
 $= \left[ \frac{5000 + 1200}{(5000 + 1200) + 90,000} \right] (100\%) = \frac{10,000}{104,000} (100\%) = 10\%$

15. Implementation of 22K Program  
 60,000 still working  
 30,000 part-time  $< 22,000 \Rightarrow$  take internships to make 22,000/month  
 10,000 actively looking for job = 20,000/month, take internship at 22,000/month

100,000 E  
 10,000 actively looking for work  $\geq 25,000$ /month  $\Rightarrow$  they keep looking. At end of year this # drops to 5,000 unemployed  
 [End of 2009 U rate w/ 22K Program =  $\frac{5,000}{105,000} (100\%)$  ] not needed for 15, but needed for 16!  
 $= \frac{1}{21} (100\%)$

LF  $\uparrow$  from 100,000 to 105,000

16. # Employed  
 U rate =  $\frac{1}{21} (100\%) < 5\%$

$$21 \overline{) 100.00} \\ \underline{84} \\ 160 \\ \underline{147} \\ 130$$

4.76%



Use the following information to answer the following 3 questions.

Due to the weak labor market after the financial crisis in 2009, the Taiwanese government guaranteed internships for new college graduates and paid them NT 22,000 (\$750) per month. Let's call this the "22K Program".

There were 120,000 new college graduates in Taiwan in 2009. If the "22 K Program" **had not** been implemented in 2009 1/2 of these graduates would have found a full time job paying at least NT 22,000 a month; 1/4 of these graduates would have found a part-time job that paid each graduate less than NT 22,000 a month; 1/12 of these graduates would have been actively searching for a job that paid a minimum of NT 25,000 per month ; 1/12 of these graduates would have been actively searching for a job that paid NT 20,000 per month, and 1/12 of these college graduates had rich parents so they did not have to work. You also know that 50% of the college graduates from 2009 would give up searching for jobs **before the end of 2009** if they were unsuccessful in finding an ideal job.

LOTS TO  
KEEP  
TRACK  
OF  
HERE!

14. Given this information, what is the unemployment rate at the end of 2009 among those college graduates if the "22 K Program" is **not implemented**?

- a.  $(1/6) * 100\%$
- b.  $(1/12) * 100\%$
- c.  $(1/10) * 100\%$
- d.  $(1/11) * 100\%$

[see work]

CLOSE  
READING  
AND  
THINKING  
HERE

15. The college graduates compare jobs and the government internships based solely on the salaries paid for each position. Holding everything else constant, what is the change in the labor force at the end of 2009 for these college graduates because of the implementation of the "22K Program" in 2009?

- a. The labor force increases by 5,000.
- b. The labor force increase by 10,000.
- c. The labor force increases by 15,000.
- d. The labor force increases by 20,000.

[see work]

LOTS OF  
WORK TO  
GET  
HERE

16. At the end of 2009, what is the number of new college graduates working and the unemployment rate after the implementation of the "22 K Program" in 2009?

- a. 100,000 new college graduates employed; 8.76%
- b. 90,000 new college graduates employed ; 8.76%
- c. 100,000 new college graduates employed; 4.76%
- d. 90,000 new college graduates employed, 4.76%



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$$\begin{array}{r} 266.7 \\ 3 \overline{) 800} \\ \underline{6} \\ 20 \\ \underline{18} \\ 20 \end{array}$$

17.

<u>Year</u>	<u>Cost of Market basket</u>
2013	$(100m)(5) + (25)(2) + (50)(2) = 50 + 50 + 100 = 200$
2014	$50 + 50 + 50 = 150$
2015	$75 + 125 + 100 = 300$
2016	$100 + 150 + 150 = 400$

<u>Year</u>	<u>CPI BY 2013</u>	<u>CPI BY 2014</u>
2013	$\frac{200}{200}(100) = 100$	
2014	$\frac{150}{200}(100) = 75$	$\frac{150}{150}(100) = 100$
2015		
2016	$\frac{400}{200}(100) = 200$	$\frac{400}{150}(100) = \frac{8}{3}(100) = 266.7$

18. rate of inflation from 2013 to 2014 =  $\frac{75-100}{100}(100\%) = -25\%$

19.

<u>Year</u>	<u>Nominal</u>	<u>CPI</u>	<u>Real</u>
2013	5,000	100	5,000
2016	x =	200	5,000

$$\text{real} = \frac{\text{nom}(\text{scale})}{\text{CPI}}$$

$$\text{real income in 2016} = \frac{\text{nom income in 2016} [\text{scale}]}{\text{CPI in 2016}}$$

$$5000 = \frac{x}{200}(100)$$

$$\frac{5000(200)}{100} = x$$

$$\$10,000 = x = \text{nominal income in 2016}$$





Use the following information to answer the following 3 questions.

In a tiny island, residents consume three goods/services. Each year, the typical consumer buys 100 mangos, 25 umbrellas, and 50 bottles of orange soda. The price of each of these goods from 2013 through 2016 is listed in the following table.

Good/Year	2013	2014	2015	2016
Mango	\$0.50	\$0.50	\$0.75	\$1
Umbrella	\$2	\$2	\$5	\$6
Bottle of Orange Soda	\$2	\$1	\$2	\$3

*Not hard:  
but  
there's  
work*

17. What is the CPI for 2016 using 2013 as the base year? What is the CPI for 2016 using 2014 as the base year? (Assume that CPI is calculated using a scale factor of 100 and round to the nearest whole number.)

- a. The 2016 CPI is 200 using 2013 as the base year; the 2016 CPI is 133 using 2014 as the base year.
- b. The 2016 CPI is 267 using 2013 as the base year; the 2016 CPI is 200 using 2014 as the base year.
- c. The 2016 CPI is 200 using 2013 as the base year; the 2016 CPI is 267 using 2014 as the base year.
- d. The 2016 CPI is 267 using 2013 as the base year; the 2016 CPI is 133 using 2014 as the base year.

*[see work]*

18. Given the above information and holding everything else constant, what was the inflation rate from 2013 to 2014?

- a. 10%
- b. -15%
- c. -20%
- d. -25%

*EASY IF  
YOU COULD  
GET  
THE  
CPIs!*

*[see work]*

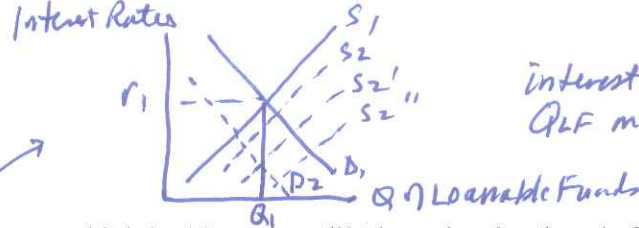
19. Now suppose that the typical resident of the tiny island had a nominal annual income of \$5,000 in 2013. The real annual income of the typical resident was the same in 2016 as it was in 2013. What was the nominal annual income of the typical resident in 2016?

- a. \$7,500
- b. \$10,000
- c. \$12,000
- d. \$12,500

*JUST  
APPLYING  
THE  
FORMULA*

*[see work]*



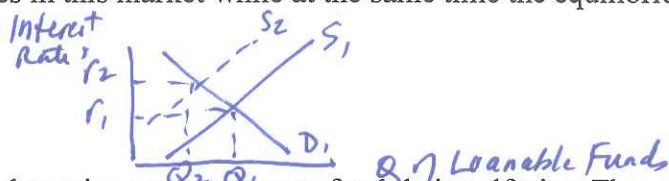


Interest rate ↓ from  $r_1$   
 QLF may ↑, ↓, or stay the same as  $Q_1$

Challenge here is just the loanable funds concepts: both curves shift qualitatively → you should expect indeterminacy

20. Suppose the government, which had been steadily been issuing bonds for years, suddenly decides that it is not going to issue any more debt. Simultaneously, the government implements looser regulations and this leads to more loanable funds coming into the country from overseas. Given these changes and holding everything else constant, what is the change in the loanable funds market?

- a. The equilibrium interest rates decrease in this market while the equilibrium quantity of loanable funds is indeterminate. ✓ [see graph]
- b. The equilibrium quantity of loanable funds decreases while at the same time the interest rate decreases. ✗
- c. The equilibrium quantity of loanable funds increases while at the same time the equilibrium interest rate becomes indeterminate. ✗
- d. The equilibrium interest rate increases in this market while at the same time the equilibrium quantity becomes indeterminate. ✗



NOT HARD

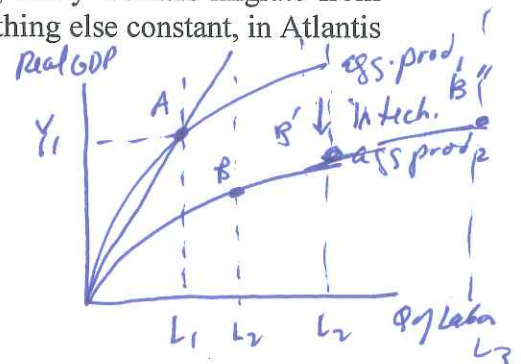
21. The government decides that they need to raise more money to fund their golf trips. The government chooses to find this additional revenue by increasing taxes on interest income. Given this change and holding everything else constant, which of the following statements is true?

- a. The equilibrium interest rate in the loanable funds market decreases while the equilibrium quantity of loanable funds decreases. ✗
- b. The equilibrium interest rate in the loanable funds market increases while the equilibrium quantity of loanable funds decreases. ✓
- c. The equilibrium interest rate in the loanable funds market decreases while the equilibrium quantity increases. ✗
- d. The equilibrium interest rate in the loanable funds market increases while the equilibrium quantity of loanable funds increases. ✗ [see graph]

Challenging

22. Mythical Atlantis is a very advanced, high technology civilization. For unknown reasons, suppose that Atlantis loses some of its advanced technologies. At the same time, due to geological processes and volcanic activity in neighboring regions, many workers migrate from these regions to Atlantis. Given this information and holding everything else constant, in Atlantis labor productivity \_\_\_\_\_ and aggregate production \_\_\_\_\_.

- a. Decreases; increases
- b. Decreases; decreases
- c. Increases; decreases
- d. Decreases; may increase, decrease, or remain unchanged



as tech ↓ and  $L \uparrow \Rightarrow$  real GDP may ↓, ↑, or remain the same as  $Y_1$   
 as tech ↓ and  $L \uparrow \Rightarrow$  labor prod ↓





LOTS OF  
WORK,  
BUT  
NOT  
HARD

23. In Happyland, competitive firms use capital and labor to produce output. The aggregate production function in Happyland is given by the following equation where  $Y$  is real GDP,  $K$  is units of capital and  $L$  is units of labor:

$$\text{Aggregate Production Function: } Y = 50 - [K / (50 + L)]$$

You are told that  $K$  is initially equal to 2500 units. You are also provided the following equations which describe the labor market where  $w$  is the wage rate measured in dollars:

$$\text{Demand for Labor: } w = 1000 - 4L$$

$$\text{Supply of Labor: } w = 100 + 0.5L$$

Suppose that the government implements a minimum wage in this labor market of \$400 while at the same time the amount of capital in this economy doubles. Given this changes and holding everything else constant, what is the percentage change in labor productivity? (Hint: you will need to first calculate the level of real GDP in this economy and its labor usage before these changes and then analyze the impact of these changes on real GDP and labor usage.) Labor productivity:

- Increases by 20%.
- Decreases by 16.67%.
- Decreases by 61.9%.
- Increases by 25%.

$$Y = 50 - \frac{K}{50+L}$$

$$Y = 50 - \frac{2500}{50+L}$$

$$1000 - 4L = 100 + \frac{1}{2}L$$

$$900 = \frac{9}{2}L$$

$$\frac{2}{9}(900) = L$$

$$200 = L$$

$$Y = 50 - \frac{2500}{50+200}$$

$$Y = 50 - \frac{2500}{250}$$

$$Y = 50 - 10 = 40$$

$$Y/L = \frac{40}{200} = \frac{1}{5}$$

min wage of 400  
K doubles to 5000  
at min wage of 400  $\Rightarrow L^D \Rightarrow$   
 $400 = 1000 - 4L'$   
 $600 = 4L'$   
 $150 = L'$

$$Y' = 50 - \frac{5000}{50+150}$$

$$Y' = 50 - \frac{5000}{200}$$

$$Y' = 25$$

$$\frac{Y'}{L'} = \frac{25}{150} = \frac{1}{6}$$

$$\begin{array}{r} 16.67\% \\ 6 \overline{)100} \\ \underline{6} \\ 40 \\ \underline{36} \end{array}$$

$$\% \Delta \text{ in Labor prod} = \left[ \frac{\frac{1}{6} - \frac{1}{5}}{\frac{1}{5}} \right] 100\%$$

$$= \left[ \frac{\frac{5}{30} - \frac{6}{30}}{\frac{6}{30}} \right] 100\%$$

$$= -\frac{1}{30} \left( \frac{30}{6} \right) (100\%)$$

$$= -\frac{1}{6} (100\%)$$

$$= -16.67\%$$

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Answers (a), (b) and (d): Only one of these can be true based strictly on logic

Use the following information to answer the following 3 questions.

Year	Nominal GDP	Real GDP	GDP Deflator
1970	200	200	100
1975	264		110
1980	325		125
1985	392	< 300	140
1990	450	300	150
1995	435	300	145
2000	496		160

$$\begin{aligned} \text{real}_{1990} &= \frac{450}{150} (100) \\ &= 300 \\ \text{This is not necessary to do:} \\ \text{real}_{1985} &= \frac{392}{140} (100) \\ &= 196 (100) \\ &= \frac{20}{29} (100) < 300 \end{aligned}$$

NOT TOO BAD

24. Given the above information and using the GDP Deflator, real GDP in year 1995:
- Decreased relative to real GDP in year 1990. ~~X~~
  - Decreased relative to real GDP in year 1985.
  - Increased relative to real GDP in year 1990. ~~X~~
  - Is equivalent to real GDP in year 1990.

$$\begin{aligned} \text{real} &= \frac{\text{nom}}{\text{GDP def}} (\text{scale}) \\ \text{real}_{1995} &= \frac{435}{145} (100) \\ &= \frac{87}{29} (100) = 3(100) = 300 \end{aligned}$$

NOT HARD

25. Given the above information and using the GDP Deflator, find the average inflation rate between 1980 and 1995.
- 440 / 13 %
  - 400 / 29 %
  - 16 %
  - 200 / 13 %

$$\begin{aligned} \text{Inflation rate} &= \left[ \frac{\text{GDP def}_{1995} - \text{GDP def}_{1980}}{\text{GDP def}_{1980}} \right] (100\%) \\ &= \left[ \frac{145 - 125}{125} \right] (100\%) \\ &= \frac{20}{125} (100\%) = \frac{20(4)}{5} = 16\% \end{aligned}$$

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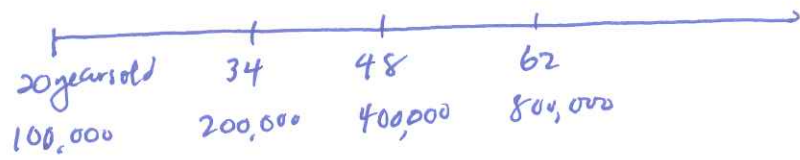
$$\begin{array}{r} 20 \\ 3.5 \overline{) 700} \end{array}$$

FROM  
KANIT'S  
LECTURE:  
DEFINITIONAL

26. The economic growth model, along with the production function that exhibits the law of diminishing returns, predicts that \_\_\_\_\_.
- The GDP per capita of poor countries will remain stagnant.
  - The GDP per capita in poor countries will grow more rapidly than the GDP per capita in rich countries.
  - The GDP per capita in rich countries will grow more rapidly than the GDP per capita in poor countries.
  - Technological progress cannot explain why the GDP per capita of rich countries and the GDP per capita of poor countries does not converge

ROLE OF  
70 =  
EASY

27. You are 20 years old today. Suppose you save \$100,000 in a retirement fund that earns 5% per year on average, starting today. At what age can you withdraw \$800,000 from this retirement fund?
- 60 years old
  - 62 years old
  - 64 years old
  - 66 years old



$$\frac{70}{5} = 14 \text{ years to double}$$

SOME  
WORK -  
BUT  
PREDICTABLE  
&  
NOT  
HARD

28. Suppose you have 500 dollars in 2017 and you would like to invest these funds. You are considering the following investment plans.

Plan A: your balance grows 7% every year (the interest rate is 7%).  $\frac{70}{7} = 10 \text{ years to double}$

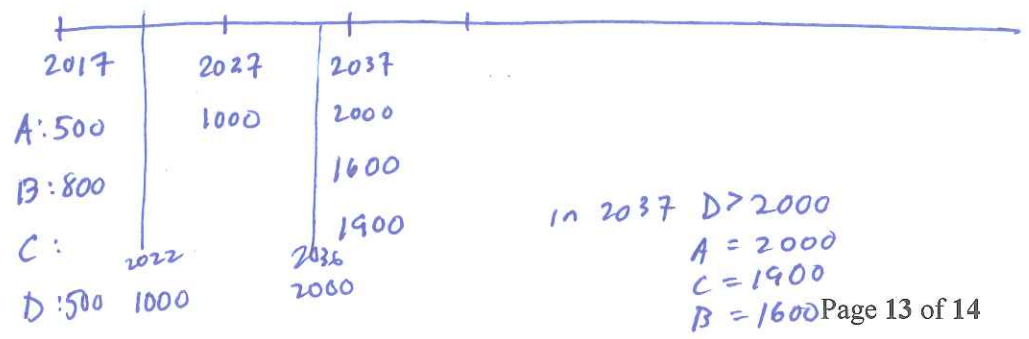
Plan B: the interest rate is 3.5% every year. To compensate you for the low interest rate, you receive \$300 today (so that the current balance increases to \$800).  $\frac{70}{3.5} = 20 \text{ years to double}$

Plan C: you will have 1900 dollars in 2037.

Plan D: The interest rate is 14% for the first 5 years, and then decreases to 5% after the first five years.  $\frac{70}{14} = \frac{10}{2} = 5 \text{ years to double}; \frac{70}{5} = 14 \text{ years to double}$

Please rank the return of these plans in 2037 from best plan (the one with highest balance in 2037) to worst plan (the one with lowest balance in 2037).

- A > D > C > B
- D > A > B > C
- D > A > C > B
- A > D > B > C



In 2037 D > 2000  
A = 2000  
C = 1900  
B = 1600





EASY:  
APPLICATION  
OF  
FORMULA

29. Suppose that you are lending money to an acquaintance, and you want to charge the acquaintance a real annual interest rate of 2%. You expect inflation to be 1.75% per year. What nominal interest rate should you charge for this loan?

- a. 1.50%
- b. 3.25%
- c. 0.25%
- d. 3.75%

$$\begin{aligned} \text{real} &= \text{nom} - \text{inflation} \\ 2 &= \text{nom} - 1.75 \quad \left\{ \text{what you expect} \right. \\ 3.75 &= \text{nom} \end{aligned}$$

NOT  
THAT  
HARD

30. Suppose that you are lending money to an acquaintance and you want to charge the acquaintance a real annual interest rate of 2%. While signing the loan agreement you operate under the expectation that inflation will be 1.75% per year. Actual inflation turns out to be 2.25% per year. What real interest rate do you end up earning?

- a. 1.25%
- b. 1.5%
- c. 2%
- d. 2.2%

$$\begin{aligned} 2 &= \text{nom} - 1.75 \quad \left\{ \text{what you expect} \right. \\ \text{nom} &= 3.75 \\ \text{actual real} &= 3.75 - 2.25 \\ \text{actual real} &= 1.5 \end{aligned}$$

**END OF EXAM**

