Econ 362 Hanes First Midterm Online Assessment

Problem 1)

Here are numbers from the Current Population Survey. Assume they include everyone relevant.
Use them to calculate the unemployment rate, in percent,
as reported in American statistics,
and write it in the space below.

Category	Number of people in that category (millions)
Employees currently working	76
Employees currently on vacation	5
Employees currently on temporary layoff, waiting to be recalled to work	12
Full-time students	24
Owners of firms who manage those firms	4
Not employed, had job interviews recently, willing to work at any wage or salary	7
Not employed, had job interviews recently, willling to work only at a salary of $10 million a year or more	3
Retired people	12
Not employed, applied to jobs recently	7
Recently deceased	3
Not employed, no recent job interviews or job applications	5

Unemployment rate   _____
  in percent

Problem 2)

Consider the simple economy of Arcadia, in which there are just five industries:
woodcutting, sheep-herding, cheesemaking, loom-making, and weaving.

Woodcutters cut wood from the forests of Arcadia. These forests are
owned by the king of Arcadia, who lives in a palace
located in the middle of the country. Woodcutters pay
rent to the king for use of the forest land. (This is like when a business rents a building.)
They sell some of the wood they cut to households, as firewood.
They sell the rest of the wood to loom-makers to be used in the construction of looms.

Shepherds raise sheep in the meadows of Arcadia. These meadows
are owned by the king of Messenia, a neighboring
country, who lives in a palace in the middle of that country.
Shepherds pay rent to the king of Messenia for the use
of the meadow land. (Again, this is like when a business rents a building.)
They sell some of the sheeps' milk to cheesemakers and some to households to be drunk by children.
They sell the wool to weavers.

Cheesemakers make the milk purchased from shepherds into cheese,
and sell the cheese to households.

Loom makers make the wood they purchase from woodcutters into looms,
which they sell to weavers.

Weavers make the wool purchased from shepherds into wool cloth,
which they sell to households.
To make the cloth weavers use looms.
A loom lasts about ten years.
When a loom is worn out, a weaver purchases a new loom from a loom-maker.

Using the information on the following page,
calculate value-added for each industry,
nominal GDP for Arcadia, and nominal GNP (also called GNI) for Arcadia.

Problem 2 (continued)

Woodcutting industry

Sales revenue	Wages of woodcutters	Rent paid for use of forest land
335	300	20

Sheep-herding industry

Sales revenue	Wages of shepherds	Rent paid for use of meadow land
770	555	74

Cheesemaking

Sales revenue	Cost of milk	Wages of cheesemakers
435	223	200

Loom-making

Sales revenue	Cost of wood	Wages of loom-making workers
240	70	160

Weaving

Sales revenue	Cost of wool	Cost of new looms	Wages of weavers
525	177	240	80

Value-added of each industry:

Woodcutting: _____

Sheep-herding: _____

Cheesemaking: _____

Loom-making: _____

Weaving: _____

Nominal GDP: _____

Nominal GNP: _____

Problem 3)
Just two final goods and services are produced in the country of Etruria: haircuts and hats.
The following table shows prices and quantities from 2012 through 2014.

	Haircuts		Hats	
	Price	Quantity	Price	Quantity
2012	6	135	54	9
2013	8	163	57	3
2014	9	149	53	7

a) What is nominal GDP in each year? Write your answers in the following table.

Nominal GDP

2012 _____

2013 _____

2014 _____

b) Construct a real GDP quantity index for each year, base year 2012, base year value equal to 100.
Now, in class I didn't tell you everything you need to know to do this.
When I got to outline section II) B) 5) c),
I said that the way you average the two numbers from steps ii) and iii) is a special,
complicated sort of average. For this problem, just take the simple, ordinary average of the numbers
from ii) and iii) to do step iv).

Real GDP Quantity Index (base year 2012 = 100)

2012 _____

2013 _____

2014 _____

c) Construct a Chained (2012) dollar real GDP index.
Again, for outline section II) B) 5) c),
I said that the way you average the two numbers from steps ii) and iii) is a special,
complicated sort of average. For this problem, just take the simple, ordinary average of the numbers
from ii) and iii) to do step iv).   xc

Chained (2012) real GDP index

2012 _____

2013 _____

2014 _____

d) Construct a Laspeyres price index , like the Consumer Price Index, base year 2012,
base year value equal to 1

Index number

2012 _____

2013 _____

2014 _____

Problem 4)
Write down two aggregate production functions. The first one should have constant
returns to scale. The second one should not have constant returns to scale. Use the z
method (algebraic method) to demonstrate that the first
one has constant returns, and the second does not.
Neither function can be exactly the same as one I used in class.

a) Function that has constant returns

b) Function that does not have constant returns