

Revision for final exam BUS 101 2024-2025

The first exercise is about the percentages. You must know and use correct formulas for scale factors and changes in prices. $1 + \frac{r}{100}$ and $1 - \frac{r}{100}$ $\frac{\text{new price}}{\text{old price}}$ This formula involves three variables. We can find the third if we know two of them writing the ratio as a scale factor. Example The new model TV is priced 34% more than the previous model. Find the price of the previous model if the price of the new model is \$871. For studying in the book, section 3. 1 solved exercises and practice problems.

Second exercise about single percentage. Scale factor in form $1 + \frac{r}{100}$ is increased and in form $1 - \frac{r}{100}$ is decreased. To find the single percentage, write the percentages as scale factors and then **multiply the scale factors**.

Example. A) Find the single percentage if the first is increase 12% and the second is 16% decrease. B) Find the second percentage if the first percentage is an 8% increase and the single percentage is decrease 8.2%.

For studying in the book, section 3. 1 and 3. 2 solved exercises and practice problems.

Third exercise. Equilibrium problem and tax. Find the equilibrium of price and quantity for the supply function $P = 3Q_S + 5$ and demand function $P = -4Q_D + 110$. Find the new equilibrium if the government imposes a tax of \$ 21. Who pays the tax?

On the book exercise example page 75 and practice problem 3 page 77.

Fourth and fifth exercises are applications of the formulas $S = \frac{a_1(r^n - 1)}{r - 1}$ $S = \frac{a_1(1 - r^n)}{1 - r}$

$$S = P \left(1 + \frac{r}{100}\right)^n \quad P = S \left(1 + \frac{r}{100}\right)^{-n} \quad S = Pe^{\frac{rt}{100}} \quad P = Se^{\frac{-rt}{100}}$$

These formulas involve four variables. You must know to find one if you know three of them (transposition of the formulas).

Practice solving exercises on the table with loans savings on compound interests (lesson 9 power point), and tables on geometric series (lesson 10 power point).

Example. A. Find the annual (monthly, quarterly, semiannually, annually) installment of a loan \$90000 in ten years if the interest rate is 4.2% compounded annually.

B) Peter decides to go to study at the university for five years. His father thinks to secure to Peter an income of \$600 every month. A bank offers a compound interest of 3.6% annually. Find the amount of money that Peter's father must invest now.

For studying in the book, section 3. 3 solved exercises and practice problems.

On the book exercise example page 75 and practice problem 3 page 77.

The sixth exercise is about appraisal investments, application of two methods NPV and IRR. Solve practice problems of the book.

Example. A) A firm needs to choose between two projects, A and B. Project A involves an initial outlay of \$9000 and yields \$11500 in four years. The project B requires an outlay of \$7500 and yields \$9676 after four years. Which of these projects would your advice the firm to invest in if the annual market rate of interest is 5%?

B) A person wants to have a secure income of \$3000 at the end of every year for the next eight years. Find the present value that he must invest now if the interest rate is 3.4% compounded annually.

For studying in the book, section 3. 3 and 3. 4 solved exercises and practice problems

The seventh exercise has to do with simple analysis of the economic activity of a firm.

A firm has observed that when it produces 5 units the total cost is 94 and can sell at the price of \$22 per unit. When it produces 12 units the total cost is \$150 and can sell at the price of \$15 per unit.

- a) Find the total cost function and the demand function, supposing that they are linear functions.
- b) Find the total revenue function, the profit function, and their maximum points (coordinates).
- c) Find breakeven points.
- d) Sketch at the same diagram the graphs of the total revenue function, total cost function, and the profit function.
- e) Write on the graph coordinates of the important points.

Section 2. 2 solved exercises and practice problems.

Typical exercise solved on exercises before midterm exam.

Note. For every type of exercises must study the solution of the corresponding exercises on power point lessons. Also, try to solve exercises on multiple choice exercises and examinations exercises which are at the end of chapters two and three.

If you use other formulas or methods different from the program formulas, must explain the used notation and prove the truth of these formulas.

Learn well the usage of the scientific calculator.

Evaluation. Exercises 1, 2,3 and 4 have 13 points. Exercise 5, 6 and 7 have 16 points.

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