Revision exercises Midterm BUS 101 24-25

Chapters 1 and 2 for study. Revision from high school. All algebraic operations and corresponding formulas (powers, logarithms, roots). Transposition of formulas. Solutions of equations and systems. Solution of problems transforming the information into formulas and algebraic operations. Properties and graphs for quadratic function, exponential function and logarithmic function. Exponential and logarithmic equations.

1. A) A transportation company of raw materials has the fixed cost $ "m" and the variable distance-volume cost given by formula d(3.5v + 10) where d is the distance in km and v is volume in m^3 of the transported materials. Write down the formula of the total cost. Find the cost of transportation of 8 m^3 materials at distance 130 km.
   B) Every month Jim's family pays $\frac{3}{14}$ of the family money "M" for his son who is student at university. He pays $\frac{4}{9}$ of its money for food. For all the other things he pays every month about 430 dollars. Find the Jim' family money.
2. Solve exponential and logarithmic equations.
   $9^x - 4 \cdot 3^x = -27$; $\ln(x-1) + \ln(2x+1) = 2\ln(x+2)$; $9^{2x-1} = 7^{x+1}$.
3. a) Transpose the formula $S = P(1 + 0.01r)^n$ to make "n" the subject.
   b) Find the value of parameter "m" of the function $f(x) = (2m-1)^x$ if $\lim_{x \to -\infty} f(x) = 0$.
4. Solve the system $5x + 2y = -7$
   $1.5x + 2.2y = 0.7$. Using whatever method
5. 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?
6. A firm has total cost function TC = 4Q + 132. The firm sells 12 units at the price of $ 20, and 16 units at price $ 16.
   a) Find demand function, write TR function, and find its maximum.
   b) Write profit function and find its maximum.
7. Based on exercise 6 find
   a) Break-even points.
   b) Sketch the graph of the total cost function, total revenue function and the profit function at the same system.
   c) Write the coordinates of the important points.

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