Exercises of test 1 2024-2025

test 1 BUS 101 types of exercises.

1. Are given the sets $A = \{x \in R / -7 < x \leq 2\}$ and $B = \{x \in R / -4 < x \leq 6\}$
   a) Write the given sets as open, closed intervals, half- open and half-closed intervals
   b) Write the subset A_1, integers of A, and subset B_1, whole numbers of B
   c) Find $A_1 \cap B_1$; $A_1 \cup B_1$; $n(A_1)$; $n(B_1)$; $n(A_1 \cap B_1)$; $n(A_1 \cup B_1)$
2. Put the brackets in the left-hand side, to be true the algebraic expression.
   $10 - 3 + 4 - 5 - 6 = 2$
3. Solve the systems (one system one method)
   $2x + 5y = 9$ $2x - 3y = 12$ $2x - 3y = 5$
   $3x - 4y = 2$ $4x + y = 10$ $3x + 2y = -12$
4. The company pays the workers "w" dollars per hour and specialists "s" dollars per hour. The minimum hours a month for workers is 160 and for specialists 140 hours. The company has "x" workers and two thirds of them are specialists. Work out the formula of the minimum monthly budget needed for wages.
5. A demand function $P = aQ + b$ is given by the table below. Find out the formula of the function and the missing numbers on the table.

P		12	6	27
Q	18	20		15

6. Jim sends his products to the market every Saturday. He thinks that the price and quantity have a linear dependency. The first Saturday he brought in the market 30 units and sold them all for $ 81 per unit. The second Saturday he sold 25 units for $ 71. Find the Jim's supply function (linear). How many units shall Jim send next Saturday to the market to sell them all at the price of $ 57 per unit?
7. Determine the equilibrium price and quantity if the demand and supply functions are:
   $P = -4Q_D + 100$
   $P = 2Q_S + 10$ If the government imposes a fixed tax of $ 18 on each good sold, determine the post-tax equilibrium for demand and supply functions. Who pays the tax?
8. Is given function $f(x) = 20 - 3x$ on domain [2, 5]. Find the range of the function and its inverse function $f^{-1}(x)$. Find maximum and minimum prices for the demand function $P = 20 - 3Q$ on domain [1, 6.5]
9. For the pair of lines $y = 2x + 1$, $3y - 6x = 4$; $y = 4x - 3$, $y = -x + 2$; $0.5y = x - 2.5$, $2x - y = 5$ state the position on the Cartesian plane without sketching their graphs and the types of the corresponding system.
10. Find inverse function of $y = -3x + 14$ on the domain [1, 4]

11. Is given economic function (demand, supply) $P = -2.5Q + 66$, $P = 3.2Q + 34$ on domain [10, 20] find the range and maximum value of P. express "Q" in terms of P.
12. Explain in your words what is slope, intercept, substitution, complementary commodity, solution of the systems, endogenous variable.
13. Systems and position of the lines on the coordinative plane.