Mathematics (ECO)

1. Simplify the expression: $\dfrac{x^2 - 9}{x - 3} + \dfrac{x + 2}{4}$

2. Find the intersection point of the functions: $Y_1 = 2X + 3$ and $Y_2 = -X + 7$

3. Solve the system of equations:

$$2x + 5y = 14$$
$$3x - y = 7$$

4. Plot the graph of function $y = -x^2 + 6x - 5$ and find:

   a) The zeros (roots) of the function

   b) The coordinates of the extreme point

   c) Is the extreme value a minimum or maximum?

5. A laptop was originally priced at €1200. The store applied a 20% discount during a sale, and then added an 8% tax on the discounted price. What was the final price of the laptop?

6. Marko, Nina, and Petar decided to invest in a joint project. Marko contributed 3 times less than Petar. Petar contributed €240 more than Marko and Nina together. Nina contributed €50 more than Marko. Find the total amount they invested in the project.

7. The weights (in kg) of six packages delivered to a store were: 12, 15, 11, 18, 15, 17.

   a) Calculate the mean weight

   b) Find the median weight

   c) Find the mode

8. A jar contains 6 white marbles, 4 black marbles, and 2 red marbles. If two marbles are drawn randomly from the jar without replacement, what is the probability of drawing a black marble and then a white marble?

9. Luka deposits €75 into his savings account each month. He already has €350 in the account.

   a) Write a formula to calculate how much money Luka will have after n months

   b) How many months will it take Luka to save €950?

10. If $3 = 4$, $4 = 9$, $5 = 16$, $6 = 25$, then $7 =$? Explain your reasoning.

11. Factorize the expression: $x^2 - 7x + 12$

12. Find the domain of the function: $f(x) = \frac{3x+2}{x^2-16}$

13. A rectangle has a perimeter of 36 cm. If its length is 4 cm more than its width, find the dimensions of the rectangle and calculate its area.

14. The sum of three consecutive even integers is 66. Find these integers.

15. A cyclist travels 24 kilometers in 2 hours. If they increase their speed by 4 km/h, how long would it take them to travel 36 kilometers?