AGLA 1. 2022. Retake of TEST 2. 18 points, 60 minutes

Full name:	Group:

Task:	1	2	3	4	Total
Score:					

In each sheet, you **should** write your last name, first name, variant number, and group number in the **upper right** corner. Unsigned sheets or sheets without the information above will NOT BE graded.

1. (5 points) Find the equations of directrices and coordinates of focus (or foci) of the following curve: $-4x + 4 + y^2 - 16 = x^2$

2. (5 points) Find the equation to the hyperbola that passes through $(2; 3)$ and has for its asymptotes the lines $4x + 3y - 7 = 0$ and $x - 2y = 1$. Explain the solution.

3. (3 points) Find the equation of line tangent to curve $6xy + 8y^2 - 12x - 26y + 11 = 0$ that are perpendicular to line $41x - 24y + 3 = 0$.

4. (5 points) Find the image of an arbitrary point M which has position vector $\mathbf{r}$ by the following transformations. It means, that you need to draw explanatory figure and show how the equation appears:

   (a) homothety with center $M_0(\mathbf{r}_0)$ and ratio $\lambda \neq 0$;

   (b) dilation of factor $\lambda > 0$ from the line $\mathbf{r} = \mathbf{r}_0 + \mathbf{a}t$.