

Name:

University number (UČO):

Problem 1: Simplify and find conditions for:

$$\left(\frac{2x}{x+y} + \frac{y}{x-y} + \frac{y^2}{y^2-x^2} \right) : \left(\frac{1}{x+y} + \frac{x}{x^2-y^2} \right).$$

Problem 2: Solve the equation $4 + 2\sqrt{x-4} = x$.**Problem 3:** Solve the inequality $\frac{x}{x-5} > \frac{1}{2}$.**Problem 4:** Solve the equation $4^{x+3} \cdot 8^{x-3} = 128$.**Problem 5:** Solve the inequality $\log_5(3x-1) < 1$.**Problem 6:** Solve the inequality $x^2 - 4x - 12 > 0$.**Problem 7:** Solve the equation $|x| - |x-2| = 2$.**Problem 8:** Find the inverse of a function $y = \sqrt{x-1}$.**Problem 9:** Find the intersections of the graphs of functions f and g , where $f(x) = x^2 - 11x + 20$, $g(x) = 6 - x^2$.**Problem 10:** Sketch a graphs of functions $h(x) = 2^x$, $f(x) = 2^{-x}$ and $g(x) = -2^x$ into one picture.