Introductory Mathematics, test 1
WS 2019/2020

1) Find all real solutions of the equality
$$||x - 1| - 2x| = 3.$$
Sollution: $x \in \left\{ -\frac{2}{3}, 2 \right\}.$

2) Find all real solutions of the inequality
$$\frac{x - 3}{x + 5} \leq \frac{2x + 3}{x - 4}.$$
Sollution: $x \in \left(-\infty, -10 - \sqrt{97} \right\rangle \cup \left(-5, -10 + \sqrt{97} \right\rangle \cup (4, +\infty).$

3) Find all real solutions of the inequality
$$\frac{2}{\sqrt{x^2 - x - 6}} \leq \sqrt{\frac{4}{-x^2 + 3x + 40}}.$$
Sollution: $x \in \left(-5, 1 - \sqrt{24} \right\rangle \cup \left\langle 1 + \sqrt{24}, 8 \right).$