$\ln|x-1| = \ln 2x+5$

$x-1=2x+5$

$x-2x=5+1$

$-x=6$

$x=-6$

0 nie należy do dziedziny

$$\log_2 (x^2 + 3x + 4) = 2$$

$$x^2 + 3x + 4 = 2^2$$

$$x^2 + 3x + 4 = 4$$

$$x^2 + 3x = 0$$

$$x_1 = 0 \quad x_2 = -3$$

$$x(x+3) = 0$$

$$x = 0$$

$$x + 3 = 0$$

$$x = 0$$

$$x = -2$$

$\log_2^2 x - 2 - 2\log_2 x - 3 = 0$

$t^2 - 2t - 3 = 0$

$\log_2(x) = t$

$t^2 - t - 3t - 3 = 0$

Замена

$t(t+1) - 3(t+1) = 0$

$\log_2 x = -1$

$(t+1)(t-3) = 0$

$\log_2 x = 3$

$t+1=0$

$t-3=0$

$t=-1$

$t=3$

$x=2^{-1}$

$x=2^3$

$x=\frac{1}{2}$

$x=8$

$x_1 = \frac{1}{2}$ $x_2 = 9$

9) $\log_2 |x-2| \leq 2$

$x-2 = 2^2$

$x \in (6; +\infty)$

$x-2 = 4$

$x = 4+2$

$x = 6$

$\log_{\frac{1}{5}}(x-3) > \log_{\frac{1}{5}}(x^2+3x+2)$

$x-3 > x^2+3x+2 \quad -x^2+2x+5=0$

$x-3-x^2+3x+2>0 \quad a=-1 \quad b=2 \quad c=5$

$-x^2+4x-1>0 \quad \Delta = b^2-4ac$

$x^2-4x+1<0 \quad \Delta = -16$

$x_{1,2} = \frac{4 \pm \sqrt{-16}}{2}$

$-2x-x^2-3+2<0$

$x \in \mathbb{R}$