

Řešte zadané rovnice a proveďte diskusi vzhledem k ekvivalenci příslušných úprav.

$$\frac{x-1}{x+1} - \frac{x-2}{x+2} = \frac{x-3}{x+3} - \frac{x-4}{x+4} \quad \left(\underline{\underline{x=0 \vee x=-\frac{5}{2}}} \right)$$

$$\sqrt{x^2+4x+4} = x-3 \quad \left(\underline{\underline{x \in \emptyset}} \right)$$

$$\sqrt{x+9} + \sqrt{x} = 2 \quad \left(\underline{\underline{x \in \emptyset}} \right)$$

$$|(x-2)(x-4)| = (x-2)(x-4) \quad \left(\underline{\underline{x \in (-\infty, 2) \cup (4, \infty)}} \right)$$

$$|x+2| + \frac{|2x-1|}{|x-3|} = 2 \quad \left(\underline{\underline{x = \frac{1}{2}(1-\sqrt{5}) \vee x = \frac{1}{2}(1-3\sqrt{5})}} \right)$$

Řešte následující nerovnice

$$\frac{2x-1}{x+2} - \frac{x+3}{x-1} > 1 \quad \left(\underline{\underline{x \in (-\infty, -2) \cup (-\frac{1}{3}, 1)}} \right)$$

$$\frac{x^2+3x-4}{x^2+2x-3} > 1 \quad \left(\underline{\underline{x \in (-3, 1) \cup (1, \infty)}} \right)$$

$$\frac{2x(2x-1) - 2x^2}{(2x-1)^2} \leq 0 \quad \left(\underline{\underline{x \in (0, 1)}} \right)$$

$$\left| \frac{x}{2} + 7 \right| < 7 \quad \left(\underline{\underline{x \in (-24, 0)}} \right)$$

$$\frac{2x-1}{4} + |2x-6| \leq \frac{5-x}{2} \quad \left(\underline{\underline{x \in \emptyset}} \right)$$

$$|2x+1| \leq |x-3| \quad \left(\underline{\underline{x \in \langle -4, \frac{2}{3} \rangle}} \right)$$

$$\sqrt{2x-8} < \sqrt{x+2} \quad \left(\underline{\underline{x \in \langle 4, 10 \rangle}} \right)$$

$$\frac{x-2\sqrt{x}-3}{x+\sqrt{x}-2} < 0 \quad \left(\underline{\underline{x \in (1, 9)}} \right)$$