

Řešte následující rovnice. Kompletní řešení opět zasílejte na e-mail.

$$(x-2)^2 + (x-9)^2 = (x-11)^2$$

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$$x^2 - 4x + 4 + x^2 - 18x + 81 = x^2 - 22x + 121$$

$$x^2 = 36$$

$$x^2 - 36 = 0 \Rightarrow (x-6)(x+6) = 0 \Rightarrow x+6 = 0 \vee x-6 = 0 \Rightarrow x = -6 \vee x = 6$$

$$K = [-6, 6]$$

$$(x-8)^2 + (x-6)^2 = 100$$

$$(x-8)^2 + (x-6)^2 = 100$$

$$x^2 - 16x + 64 + x^2 - 12x + 36 = 100$$

$$2x^2 - 28x + 100 = 100$$

$$2x^2 - 28x = 0 / : 2$$

$$x^2 - 14x = 0$$

$$x(x-14) = 0$$

$$x = 0 \vee x - 14 = 0$$

$$x_1 = 0 \vee x_2 = 14$$

$$K = \{0; 14\}$$

$$\frac{5x-1}{6-\frac{1}{3}} = \frac{x+2}{\frac{5}{3}}$$
$$\frac{x-1}{2+\frac{1}{6}} = \frac{4x-1}{15-\frac{1}{3}}$$

$$\frac{5x-1}{6-3} = \frac{x+2}{5+5}$$

$$\frac{x+1}{2+6} = \frac{4x-1}{15-3}$$

$$\frac{5x-2}{3x+1} = \frac{3x+10}{4x-5}$$

$$\frac{6}{3x+1} = \frac{15}{4x-5}$$

$$\frac{5x-2}{3x+1} = \frac{3x+10}{4x-5}$$

$$(5x-2)(4x-5) = (3x+10)(3x+1)$$

$$20x^2 - 8x - 25x + 10 = 9x^2 + 30x + 3x + 10$$

$$11x^2 - 66x = 0 \quad | :11$$

$$x^2 - 6x = 0$$

$$x(x-6) = 0$$

$$x_1 = 0 \quad \vee \quad x_2 = 6$$

$$K = \{0; 6\}$$

$$2+x = \frac{4}{2-x}$$

$$2+x = \frac{4}{2-x} \quad x \neq 2$$

$$(2+x)(2-x) = 4$$

$$4 - 2x + 2x - x^2 = 4$$

$$4 - x^2 = 4$$

$$x^2 = 0$$

$$x_1 = x_2 = 0$$

$$K = \{0\}$$

$$x = \frac{4}{5 - \frac{4}{5-x}}$$

$$x = \frac{4}{5 - \frac{4}{5-x}} \quad x \neq 5$$

$$x = \frac{4}{\frac{21-5x}{5-x}}$$

$$x = \frac{4(5-x)}{21-5x} \quad x \neq \frac{21}{5}$$

$$x(21-5x) = 4(5-x)$$

$$21x - 5x^2 = 20 - 4x$$

$$-5x^2 + 25x - 20 = 0 \quad / : (-5)$$

$$x^2 - 5x + 4 = 0$$

$$x_{1,2} = \frac{5 \mp \sqrt{(-5)^2 - 4 \cdot 1 \cdot 4}}{2 \cdot 1} = \frac{5 \mp \sqrt{9}}{2} = \frac{5 \mp 3}{2}$$

$$x_1 = 1 \quad \vee \quad x_2 = 4$$

$$K = \{1; 4\}$$