$x \in \mathbb{N}$

Multiplikativní	Aditivní
$2^3 = 2 \cdot 2 \cdot 2$	$3 \cdot 2 = 2 + 2 + 2$
$x^4 = x \cdot x \cdot x \cdot x$	$4 \cdot x = x + x + x + x$
$2^x = \underbrace{2 \cdot 2 \cdot \ldots \cdot 2}_{x}$	$x \cdot 2 = \underbrace{2 + 2 + \ldots + 2}_{x}$

1)

$$\frac{y\text{-}7}{4\text{-}y} - \frac{3\text{-}2y}{y\text{-}4} = 0$$

$$\frac{y\text{-}7}{-(y-4)} - \frac{3\text{-}2y}{y\text{-}4} = 0$$

$$\frac{-(y-7)-(3-2y)}{y\text{-}4} = 0$$

$$\frac{7-y-3+2y}{y-4} = 0$$

$$\frac{4+y}{y-4} = 0 \quad / \cdot (y-4)$$

$$4 + y = 0$$

$$\underline{\underline{y = -4}}$$

2)

$$\frac{2x^2 - x - 3}{2x^2\text{-}2} - 1 = 0$$

$$\frac{2x^2 - x - 3 - (2x^2 - 2)}{2x^2\text{-}2} = 0$$

$$\frac{-x-1}{2(x^2-1)} = 0$$

$$\frac{-(x+1)}{2(x+1)(x-1)} = 0$$

$$\frac{\text{-}1}{2(x-1)} = 0 \quad / \cdot 2(x-1)$$

$$-1 = 0$$

Nemá řešení

3)

$$|2x-3| \geq |3x-2|$$

$2x-3=0$	$3x-2=0$
$2x=3$	$3x=2$
$x={}^{3}/_{2}$	$x={}^{2}/_{3}$

	$(-\infty; {}^{2}/_{3}\rangle$	$\langle {}^{2}/_{3}; {}^{3}/_{2}\rangle$	$\langle {}^{3}/_{2}; \infty)$
$2x-3$	-	-	+
$3x-2$	-	+	+

$(-\infty; {}^{2}/_{3}\rangle$	$\langle {}^{2}/_{3}; {}^{3}/_{2}\rangle$	$\langle {}^{3}/_{2}; \infty)$
$-(2x-3) \geq -(3x-2)$	$-(2x-3) \geq +(3x-2)$	$+(2x-3) \geq +(3x-2)$
$3-2x \geq 2-3x$	$3-2x \geq 3x-2$	$2x-3 \geq 3x-2$
$x \geq -1$	$x \leq 1$	$x \leq -1$
$x \in (-\infty; {}^{2}/_{3}\rangle \cap \langle -1; \infty)$	$x \in \langle {}^{2}/_{3}; {}^{3}/_{2}\rangle \cap (-\infty; 1\rangle$	$x \in \langle {}^{3}/_{2}; \infty) \cap (-\infty; -1\rangle$
$x \in \langle -1; {}^{2}/_{3}\rangle$	$x \in \langle {}^{2}/_{3}; 1\rangle$	$x \in \emptyset$

$$R = \langle -1; {}^{2}/_{3}\rangle \cup \langle {}^{2}/_{3}; 1\rangle = \langle -1; 1\rangle$$

4)

$$|2x+1| < |3-x|$$

$2x+1=0$	$3-x=0$
$2x=-1$	$x=3$
$x=-{}^{1}/_{2}$	

	$(-\infty; -{}^{1}/_{2}\rangle$	$\langle -{}^{1}/_{2}; 3\rangle$	$\langle 3; \infty)$
$2x+1$	-	+	+
$3-x$	+	+	-

$(-\infty; -{}^{1}/_{2}\rangle$	$\langle -{}^{1}/_{2}; 3\rangle$	$\langle 3; \infty)$
$-(2x+1) < +(3-x)$	$+(2x+1) < +(3-x)$	$+(2x+1) < -(3-x)$
$-2x-1 < 3-x$	$2x+1 < 3-x$	$2x+1 < x-3$
$x > 4$	$x < {}^{2}/_{3}$	$x < -4$
$x \in (-\infty; -{}^{1}/_{2}\rangle \cap \langle -4; \infty)$	$x \in \langle -{}^{1}/_{2}; 3\rangle \cap (-\infty; {}^{2}/_{3}\rangle$	$x \in \langle 3; \infty) \cap (-\infty; -4\rangle$
$x \in \langle -4; -{}^{1}/_{2}\rangle$	$x \in \langle -{}^{1}/_{2}; {}^{2}/_{3}\rangle$	$x \in \emptyset$

$$R = \langle -4; -{}^{1}/_{2}\rangle \cup \langle -{}^{1}/_{2}; {}^{2}/_{3}\rangle = \langle -4; {}^{2}/_{3}\rangle$$

5)

!!! x pod odmocninou -> VŽDY ZKOUŠKA !!!

$\sqrt{2x-1} + \sqrt{3x+1} = 3$
$(\sqrt{2x-1} + \sqrt{3x+1})^2 = 3^2$
$2x-1 + 2\sqrt{2x-1}\sqrt{3x+1} + 3x + 1 = 9$
$2\sqrt{2x-1}\sqrt{3x+1} = 9-5x$
$4(2x-1)(3x+1) = 81-90x+25x^2$
$4(6x^2+2x-3x-1) = 81-90x+25x^2$
$4(6x^2-x-1) = 81-90x+25x^2$
$24x^2-4x-4 = 25x^2-90x+81 \quad /-24x^2$
$-4x-4 = x^2-90x+81 \quad /+4x$
$-4 = x^2-86x+81 \quad /+4$
$x^2-86x+85 = 0$
$$x = \frac{86 \pm \sqrt{(-86)^2 - 4 \cdot 85}}{2} = \frac{86 \pm \sqrt{7396-340}}{2} = \frac{86 \pm \sqrt{7056}}{2} = \frac{86 \pm 84}{2}$$
$$x_1 = \frac{86+84}{2} = \frac{170}{2} = 85$$
$$x_2 = \frac{86-84}{2} = \frac{2}{2} = 1$$
Zk:
$x_1 = 29 \neq 3$
$\underline{x_2 = 3}$