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MAD3, Freitag, 12.1.2018

$$\textcircled{1} \quad \frac{1}{a^2+3a} + \frac{1}{a} = -\frac{1}{a+3}$$

$$\frac{1}{a(a+3)} + \frac{1}{a} = -\frac{1}{a+3} \quad (*) \quad \mathbb{D} = \mathbb{R} \setminus \{-3; 0\} \quad (*)$$

$$\text{kgV: } a(a+3)$$

$$1 + (a+3) = -a \quad (*)$$

$$1 + a + 3 = -a$$

$$2a = -4$$

$$a = -2$$

$$\mathbb{L} = \{-2\}$$

$$\textcircled{2} \quad \frac{x+6}{4-x} + \frac{x-6}{x-4} = \frac{24}{16-x^2}$$

$$\frac{x+6}{4-x} - \frac{x-6}{4-x} = \frac{24}{(4+x)(4-x)} \quad \mathbb{D} = \mathbb{R} \setminus \{\pm 4\}$$

$$\text{kgV: } (4+x)(4-x)$$

$$(x+6)(4+x) - (x-6)(4+x) = 24$$

$$(4+x) \left[(x+6) - (x-6) \right] = 24$$

$$(4+x) \cdot 12 = 24$$

$$4+x = 2$$

$$x = -2$$

$$\mathbb{L} = \{-2\}$$

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$$\textcircled{3} \quad \frac{k+3}{6} + \frac{k+1}{2k-6} = \frac{k-1}{k-3}$$

$$\frac{k+3}{6} + \frac{k+1}{2(k-3)} = \frac{k-1}{k-3}$$

$$\mathbb{D} = \mathbb{R} \setminus \{3\}$$

$$\text{kgV: } 6(k-3)$$

$$(k+3)(k-3) + 3(k+1) = 6(k-1)$$

$$k^2 - 9 + 3k + 3 = 6k - 6$$

$$k^2 - 3k = 0$$

$$k(k-3) = 0 \quad \left. \begin{array}{l} k_1 = 0 \\ k_2 = 3 \notin \mathbb{D} \end{array} \right\} \Rightarrow \mathcal{L} = \{0\}$$

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$$\textcircled{4} \frac{1}{x^2-5x} - \frac{1}{x^2+x} = \frac{1}{x^2-4x-5}$$

 $\{-1; 0; 5\}$

$$\frac{1}{x(x-5)} - \frac{1}{x(x+1)} = \frac{1}{(x+1)(x-5)} \quad \mathbb{D} = \mathbb{R} \setminus \{-1; 5\}$$

 $\text{ggl: } x(x+1)(x-5)$

$$(x+1) - (x-5) = x$$

$$x+1-x+5 = x$$

$$246 = x$$

$$\underline{\underline{x=6}}$$

$$\mathbb{L} = \{6\}$$

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$$\textcircled{5} \quad \frac{2x}{x-2} - \frac{2x-4}{x-3} = \frac{4}{x^2-5x+6}$$

$$\frac{2x}{x-2} - \frac{2(x-2)}{x-3} = \frac{4}{(x-2)(x-3)}$$

$$D = \mathbb{R} \setminus \{2, 3\}$$

$$\text{kgV: } (x-2)(x-3)$$

$$2x(x-3) - 2(x-2)^2 = 4$$

$$2x^2 - 6x - (2x^2 - 8x + 8) = 4$$

$$\underline{2x^2} - \underline{6x} - \underline{2x^2} + \underline{8x} - 8 = 4$$

$$2x = 12$$

$$\underline{\underline{x = 6}}$$

$$\llcorner = \{6\}$$

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