Opgave 024

a) $\dfrac{x+7}{3} - \dfrac{3x-7}{4} = \dfrac{x-1}{2}$ $\qquad 1 \cdot 3 \cdot 4 \cdot 2$

$$4 \cdot 2 \cdot (x+7) - 3 \cdot 2 \cdot (3x-7) = 3 \cdot 4 \cdot (x-1)$$
$$8x + 56 - (18x - 42) = 12x - 12$$
$$8x + 56 - 18x + 42 = 12x - 12$$
$$-10x + 48 = 12x - 12$$
$$-10x - 12x = -12 - 48$$
$$-22x = -110 \qquad |:-22$$
$$x = 5$$

b) $\dfrac{3}{x-3} - \dfrac{1}{2x-6} = \dfrac{5}{6}$

$$\dfrac{6}{2x-6} - \dfrac{1}{2x-6} = \dfrac{5}{6}$$

$$\dfrac{6-1}{2x-6} = \dfrac{5}{6}$$

$$\dfrac{5}{2x-6} = \dfrac{5}{6}$$

$$5 \cdot (2x-6) = 5 \cdot 6$$
$$10x - 30 = 30$$
$$10x = 30 + 30$$
$$10x = 60 \qquad |:10$$
$$x = 6$$

c) $\dfrac{2+x}{5x-15} + \dfrac{1}{5} = \dfrac{7}{15} + \dfrac{2}{3x-9}$ $\quad 1 \cdot (5x-15) \cdot (3x-9) \cdot 5 \cdot 15$

$$\dfrac{(2+x) \cdot 5 + 1 \cdot (5x-15)}{25x-75} = \dfrac{7}{15} + \dfrac{2}{3x-9}$$

$$\dfrac{10 + 5x + 5x - 15}{25x-75} = \dfrac{7}{15} + \dfrac{2}{3x-9}$$

$$\dfrac{10x - 5}{25x-75} = \dfrac{7}{15} + \dfrac{2}{3x-9}$$

$$\dfrac{10x - 5}{25x-75} = \dfrac{7 \cdot (3x-9) + 2 \cdot 15}{15 \cdot (3x-9)}$$

$$\dfrac{10x - 5}{25x-75} = \dfrac{(21x-63) + 30}{45x-135}$$

$$\dfrac{10x - 5}{25x-75} = \dfrac{21x-33}{45x-135}$$

$(10x - 5) \cdot (45x-135) = (21x-33) \cdot (25x-75)$

$450x^2 - 225x - 1350x + 675 = 525x^2 - 825x - 1575x + 2475$

$450x^2 - 1575x + 675 = 525x^2 - 2400x + 2475$

$450x^2 + 825x = 525x^2 + 1800$

$75x^2 + 825x = 1800 \qquad |:75$

$x^2 - 11 = -24$

$x^2 - 11 + 24 = 0$

$$\dfrac{11 + \sqrt{-11^2 - 4 \cdot 1 \cdot 24}}{2 \cdot 1}$$

$$\dfrac{11 + \sqrt{-11^2 - 96}}{2}$$

$$\dfrac{11 + \sqrt{25}}{2}$$

$$\dfrac{11 + 5}{2}$$

$$\dfrac{16}{2}$$

$= 8$