QA 1991 III/1

Löse die Gleichung:

$$\frac{x}{5} - 0{,}5 + \frac{2x+8}{10} = 0{,}2x + \frac{3x}{18} + 3$$

$$\frac{x}{5} - 0{,}5 + \frac{2x+8}{10} = 0{,}2x + \frac{x}{6} + 3 \qquad / \cdot 60$$

$$\frac{60x}{5} - 60 \cdot 0{,}5 + \frac{60(2x+8)}{10} = 60 \cdot 0{,}2x + \frac{60x}{6} + 3 \cdot 60$$

12x - 30 + 6(2x + 8) = 12x + 10x + 180

12x - 30 + 12x + 48 = 22x + 180

24x + 18 = 22x + 180 / - 22x

2x + 18 = 180 / - 18

2x = 162 / : 2

x = 81

QA 1991 V/1

$$\frac{49}{x} - 7\left(\frac{4}{x} - \frac{2}{3}\right) = \frac{63}{x} \bullet 2 - 10\frac{1}{3}$$

$$\frac{49}{x} - \frac{28}{x} + \frac{14}{3} = \frac{126}{x} - \frac{31}{3} \qquad / \text{ Hauptnenner} \cdot 3x$$

$3 \cdot 49 - 3 \cdot 28 + 14x = 126 \cdot 3 - 31x$

63 + 14x = 378 - 31x / + 31x

63 + 45x = 378 - 63

45x = 315 / : 45

x = 7

QA 1992 II/1

$$4(\frac{3}{4}x+10)-(x+64)=\frac{1}{3}x-\frac{2x-13}{5}+23$$

$$3x+40-x-64=\frac{x}{3}-\frac{2x-13}{5}+23 \qquad \text{/ Hauptnenner} \cdot 15$$

45x + 600 – 15x – 960 = 5x – 3(2x – 13) + 345

30x - 360 = 5x - 6x + 39 + 345

30x - 360 = - x +384 / + x

31x - 360 = 384 / + 360

31x = 744 / : 31

x = 24

QA 1992 IV/1

$$28-2(\frac{9}{x}+4)=\frac{28+4}{2x}+\frac{94}{x}-12$$

$$28-\frac{18}{x}-8=\frac{28+4}{2x}+\frac{94}{x}-12 \qquad \text{/ Hauptnenner} \cdot 2x$$

56x – 36 – 16x = 32 + 188 – 24x

40x – 36 = 220 - 24x / + 24x

64x – 36 = 220 / + 36

64x = 256 / : 64

x = 4

QA 1992 V/1

$$(1{,}2x + 1{,}5) \bullet 0{,}7 - (0{,}3 - 1{,}7x) \bullet 1{,}2 = (21{,}38 - 4{,}24x) \bullet 0{,}5$$

0,84x + 1,05	- 0,36 + 2,04 x	= 10,69 – 2,12x	
2,88x + 0,69		= 10,69 – 2,12x	/ + 2,12x
5x		= 10	/ : 2
x		= 2	

QA 1993 I/1

$$\frac{4(x+10)}{5} - \frac{2(x-9)}{3} = 4\left(\frac{x}{3} - 14\frac{1}{2}\right)$$

$$\frac{4x+40}{5} - \frac{2x-18}{3} = \frac{4x}{3} - \frac{116}{2} \qquad / \text{ Hauptnenner} \cdot 30$$

$$\frac{30(4x+40)}{5} - \frac{30(2x-18)}{3} = \frac{30 \cdot 4x}{3} - \frac{30 \cdot 116}{2}$$

6(4x + 40) – 10(2x – 18)	=	40x	-	1740	
24x + 240 – 20x + 180	=	40x	-	1740	
4x + 420	=	40x	-	1740	/ - 4x
420	=	36x	-	1740	/ + 1740
2160	=	36x			/ : 36
60	=	x			

QA 1993 III/3

$$\frac{9}{x} - 2\frac{2}{5} - \frac{3}{2}\left(\frac{9}{x} - 3\right) = \frac{6}{x}$$

$$\frac{9}{x} - \frac{12}{5} - \frac{27}{2x} + \frac{9}{2} = \frac{6}{x} \qquad / \text{ Hauptnenner} \cdot 10x$$

$90 - 24x - 135 + 45x = 60$

$-45 + 21x = 60 \qquad / + 45$

$21x = 105 \qquad / : 21$

$\underline{x = 5}$

QA 1993 IV/4

$$4(4{,}7x - 14{,}7) - 16\frac{1{,}075x + 1{,}375}{2} = 43{,}3 - (37{,}5 - 2{,}5x) \bullet 1{,}8$$

$$18{,}8x - 58{,}8 - \frac{17{,}2x + 22}{2} = 43{,}3 - 67{,}5 + 4{,}5x \qquad / \cdot 2$$

$37{,}6x - 117{,}6 - 17{,}2x - 22 = 86{,}6 - 135 + 9x$

$20{,}4x - 139{,}6 = -48{,}4 + 9x \qquad / - 9x$

$11{,}4x - 139{,}6 = -48{,}4 \qquad / + 139{,}6$

$11{,}4x = 91{,}2 \qquad / : 11{,}4$

$\underline{x = 8}$

QA 1993 V/1

$$\frac{4}{5}(30x-75)-(x+27)=\frac{11x-29}{3}$$

$$24x-60-x-27=\frac{11x-29}{3} \qquad / \text{ Hauptnenner} \cdot 3$$

$72x - 180 - 3x - 81 = 11x - 29$

$69x - 261 = 11x - 29 \qquad / - 11x$

$58x - 261 = -29 \qquad / + 261$

$58x = 232 \qquad / : 58$

$x = 4$

QA 1994 I/3

$$2{,}1\left(\frac{5x}{6}+1{,}1x\right)-0{,}76x+\frac{16{,}25x}{18}=\frac{610-21{,}35x}{18}-28{,}5$$

$$\frac{10{,}5x}{6}+2{,}31x-0{,}76x+\frac{16{,}25x}{18}=\frac{610-21{,}35x}{18}-28{,}5 \qquad / \cdot 18$$

$31{,}5 + 41{,}58 - 13{,}68 + 16{,}25x = 610 - 21{,}35x - 513$

$59{,}4 + 16{,}25x = 97 - 21{,}35x \qquad / + 21{,}35x$

$59{,}4 + 37{,}6x = 97 \qquad / - 59{,}4$

$37{,}6x = 37{,}6 \qquad / : 37{,}6$

$x = 1$