

$$x - 3 = 0$$

$$\begin{array}{r} x - 3 = 0 \\ -3 + \\ \hline 3 - 3 = 0 \end{array}$$

$$x = 3$$

$$x + 2 = 0$$

$$\begin{array}{r} x + 2 = 0 \\ x + 2 = 0 \\ -2 - 2 \\ \hline x = -2 \end{array}$$

LINEAIRE VERGELIJKINGEN.

a) Basis Lineaire Vergelijkingen

Op te lossen: $x + 2 = 0 \implies x = -2$

Video op Youtube 

Interactieve Oefening 

$$\begin{array}{l} 3 + 2 \neq 0 \\ 1 + 2 \neq 0 \\ -2 + 2 = 0 \end{array}$$

$x - 9 = 0$

$$\begin{array}{r} x - 9 = 0 \\ x - 9 = 0 \\ +9 +9 \\ \hline x = 9 \end{array}$$

$x + 9 = 0$

$$\begin{array}{r} x + 9 = 0 \\ x + 9 = 0 \\ -9 -9 \\ \hline x = -9 \end{array}$$

$2x = -4$

$$\begin{array}{r} 2x = -4 \\ 2x = -4 \\ :2 :2 \\ \hline x = -2 \end{array}$$

$x - 8 = -2$

$$\begin{array}{r} x - 8 = -2 \\ x - 8 = -2 \\ +8 +8 \\ \hline x = 6 \end{array}$$

$-3x = -12$

$$\begin{array}{r} -3x = -12 \\ -3x = -12 \\ :(-3) :(-3) \\ \hline x = 4 \end{array}$$

$-x - 3 = 72$

$$\begin{array}{r} -x - 3 = 72 \\ -x - 3 = 72 \\ +3 +3 \\ \hline -x = 75 \\ :(-1) :(-1) \\ \hline x = -75 \end{array}$$

$-22x = 98$

$$\begin{array}{r} -22x = 98 \\ -22x = 98 \\ :(-22) :(-22) \\ \hline x = -\frac{98}{22} = -\frac{49}{11} \end{array}$$

$x - 2 = -5$

$$\begin{array}{r} x - 2 = -5 \\ x - 2 = -5 \\ +2 +2 \\ \hline x = -3 \end{array}$$

$2x = -16$

$$\begin{array}{r} 2x = -16 \\ 2x = -16 \\ :2 :2 \\ \hline x = -8 \end{array}$$

$$\frac{0}{-1} = -0$$

X

b) Algemene lineaire vergelijkingen

$$ax + b = cx - d$$

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Interactieve Oefening



$$2 \cdot 1 + 9 = 11$$

$$2 \cdot 3 + 9 = 15$$

$$\cancel{2 \cdot 4}$$

 $x \leftarrow \rightarrow$ getallen

$$2x + 9 = 4x + 3$$

$$4 \cdot 3 + 3 = 15$$

$$4 \cdot 1 + 3 = 7$$

$$2x - 4x = 3 - 9$$

$$-2x = -6$$

$$x = \frac{-6}{-2} \quad (7 - 6 + 2)$$

$$x = 3$$

 $x \leftarrow \rightarrow$ 1, ..

$$6x - 2 + 14x = 4 - 31x + 2 + 17x$$

$$6x + 14x + 3 + 2 - 17x = 4 + 2 + 2$$

$$\frac{6 + 14 + 31 - 17}{20 + 31} = \frac{4 + 2 + 2}{7}$$

$$34x = 8 \quad (\neq 8 - 34)$$

$$x = \frac{8}{34}$$

$$x = \frac{4}{17}$$

$$17x - 2 = 5x - 3$$

$$17x - 5x = -3 + 2$$

$$12x = -1$$

$$x = \frac{-1}{12}$$

$$-5x + 1 + 14x = 4x - 3 + 2x + 9$$

$$-5x + 14x - 4x - 2x = -3 + 9 - 1$$

$$-6 - 4 - 4 - 2$$

$$\frac{-6 - 4}{-10} = \frac{-10}{-10} = 1$$

$$-25x = 5 \quad (\neq 25)$$

$$x = \frac{5}{-25} = -\frac{1}{5}$$

$$x = -\frac{1}{5}$$

$$5x - 2 + 4x = 4 - 3x + 21 + 7x$$

$$5x + 4x + 3x - 7x = 4 + 21 + 2$$

$$5 + 4 + 3 - 7 = 25 + 2$$

$$\frac{5 + 4}{-1} = \frac{27}{-1} = -27$$

$$5x = 27$$

$$\neq 27 - 5$$

$$x = \frac{27}{5}$$

$$-4x + 2 = 3 - x$$

$$-4x + x = 3 - 2$$

$$-3x = 1$$

$$x = \frac{1}{-3} = -\frac{1}{3}$$

$$x = -\frac{1}{3}$$

haakjes

$$2(x+3) = 2x+6$$

$$3(x-2) = 3x-6$$

Lineaire vergelijkingen

$$3(2x-3) = 6x-9$$

$$-2(2x-3) = -4x+6$$

$$a(x+b) = c(x-d)$$

$$2(x-1) = -3$$

$$2x-2 = -3$$

$$2x = -3+2$$

$$2x = -1$$

$$x = \frac{-1}{2}$$

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

$$6x-2 = -6x-15$$

$$6x+6x = -15+2$$

$$12x = -13$$

$$x = \frac{-13}{12}$$

$$-(3x-2)+7 = 3(x+5)-3$$

$$-3x+2+7 = 3x+15-3$$

$$-3x-3x = 15-3-2-7$$

$$-6x = 3$$

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

$$x = -\frac{1}{2}$$

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

$$2x-2-3 = -4x+8+4x-3$$

$$2x = 8+2$$

$$2x = 10$$

$$x = \frac{10}{2} = 5$$

$$2x-2-3 = -4x+8+4x-3$$

$$2x+4x-4x = 8-3+2+3$$

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

$$-2x+4-3 = 12x-8+x-2$$

$$-2x-12x-x = -8-2-4+3$$

$$-15x = -11$$

$$x = \frac{-11}{-15} = \frac{11}{15}$$

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

$$2x-2+6x-15+2 = 4x+8+3x-2$$

$$2x+6x-4x-3x = 8-2+15-9$$

$$1x = 21$$

$$x = 21$$

Breken $\frac{1}{2} + \frac{1}{3} = \frac{3+2}{6} = \frac{5}{6}$ Lineaire vergelijkingen

$$\frac{a}{b}(x+c) = \frac{c}{d}(x-e)$$

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

$$\frac{3x}{2} + \frac{3}{4}x = \frac{3}{2} + \frac{3}{4}$$

$$\frac{3}{2} + \frac{3}{4} = \frac{6+3}{4} = \frac{9}{4}$$

$$\frac{9}{4}x = \frac{9}{4} \Rightarrow x = \frac{9}{4} \cdot \frac{4}{9} = 1$$

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

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

$$\frac{7}{2} + \frac{3}{5} = \frac{35+6}{10} = \frac{41}{10}$$

$$\frac{41}{10}x = \frac{3}{20} \Rightarrow x = \frac{3}{20} \cdot \frac{10}{41} = \frac{3}{82}$$

B. $\frac{1}{3}$

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

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

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

$$\frac{1}{3} + 3 = \frac{1+9}{3} = \frac{10}{3}$$

$$\frac{10}{3}x = 2 \Rightarrow x = \frac{2 \cdot 3}{10} = \frac{3}{5}$$

$$\frac{3x}{5} + \frac{2}{5}(x-\frac{3}{2}) = -3x + \frac{3}{2}$$

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

$$\frac{2}{5}x + \frac{3}{5}x + 3x = \frac{3}{2} + \frac{3}{5}$$

$$\frac{2}{5} + \frac{3}{5} + 3 = \frac{15+6}{10} = \frac{21}{10}$$

$$\frac{21}{10}x = \frac{9}{10} \Rightarrow x = \frac{9}{10} \cdot \frac{10}{21} = \frac{3}{7}$$

$\frac{2}{3} \cdot \frac{1}{2}$

$$\frac{2}{3}(x-\frac{1}{2}) = \frac{1}{3} + \frac{1}{4}(\frac{1}{3}x-1)$$

$$\frac{2}{3}x - \frac{1}{3} = \frac{1}{3} + \frac{1}{12}x - \frac{1}{4}$$

$$\frac{2}{3}x - \frac{1}{12}x = \frac{1}{3} - \frac{1}{4} + \frac{1}{3}$$

$$\frac{8}{12} - \frac{1}{12} = \frac{7}{12}$$

$$\frac{7}{12}x = \frac{5}{12} \Rightarrow x = \frac{5}{12} \cdot \frac{12}{7} = \frac{5}{7}$$

$$x = x + 1$$

$$x - x = 1$$

$$0x = 1$$

$$0 = 1$$

Geen oplossing

$$2x = 2x$$

$$2x - 2x = 0$$



$$0 = 0$$

Lineaire vergelijkingen

alle getallen !!
TR

c) Speciale lineaire vergelijkingen

$$x = x + 1 \text{ of } 2x = 2x$$

 <p>Video op Youtube</p>	 <p>Interactieve Oefening</p>
$2x - 5 = 2(x - 2)$ $2x - 5 = 2x - 4$ $2x - 2x = -4 + 5$ $0x = 1$ <p>Geen oplossing</p>	$-4x - 6 = -4(x + 2)$ $-4x - 6 = -4x - 8$ $-4x + 4x = -8 + 6$ $0x = -2$ <p>Geen oplossing</p>
$3x - 6 = 2(x - 2) + x - 2$ $3x - 6 = 2x - 4 + x - 2$ $3x - 2x - x = -4 - 2 + 6$ $0x = 0$ <p>Alle getallen</p>	$3x - 4 = 2(x - 2)$ $3x - 4 = 2x - 4$ $3x - 2x = -4 + 4$ $x = 0$
$x - 6 = 2(x - 2) - x - 2$ $x - 6 = 2x - 4 - x - 2$ $x - 2x + x = -4 - 2 + 6$ $0x = 0$ <p>alle getallen</p>	$3(x - 1) = x - 2 + 2(x - 1)$ $3x - 3 = x - 2 + 2x - 2$ $3x - x - 2x = -2 - 2 + 3$ $0x = -1$ <p>Geen oplossing</p>
$x - 5 = 2(x - 2) + x - 1$ $x - 5 = 2x - 4 + x - 1$ $x - 2x - x = -4 - 1 + 5$ $-2x = 0$ $x = \frac{0}{-2} = 0$ $x = 0$	$x - 5 = (x - 2) - 1$ $x - 5 = x - 2 - 1$ $x - x = -2 - 1 + 5$ $0x = 2$ <p>Geen oplossing</p>