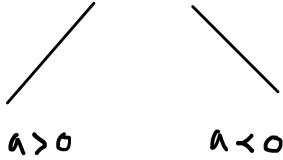


Ensimmäisen asteen polynomifunktio

nimi muuttuja

$$f(x) = ax + b$$

kuvaaja on suora



$$f(0) = -3 \cdot 0 + 5 = 5$$

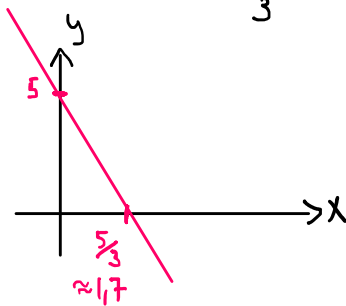
nollakohta

$$f(x) = 0$$

$$-3x + 5 = 0$$

$$-3x = -5 \quad || :(-3)$$

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



$$\text{esim. } f(x) = -3x + 5$$

$$f(2) = -3 \cdot 2 + 5 = -6 + 5 = -1$$

funktion arvo

muuttujan arvo

$$f(x) = -4$$

$$-3x + 5 = -4 \quad || -5$$

$$-3x = -4 - 5$$

$$-3x = -9 \quad || :(-3)$$

$$x = 3$$

5.36

(3.1)

$$f(x) = 3x - 9$$

$$g(x) = 7x - 3$$

$$a) f(x) = 0$$

$$3x - 9 = 0 \quad || +9$$

$$3x = 9 \quad || :3$$

$$x = 3$$

$$f(3) = 3 \cdot 3 - 9 = 9 - 9 = 0$$

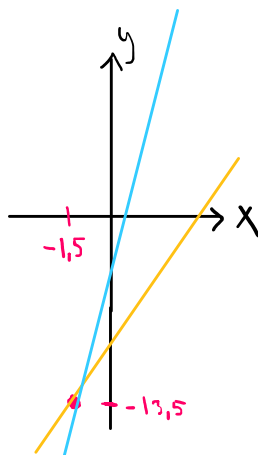
speedcrunch

$$f(x) = 3x - 9$$

$$g(x) = 7x - 3$$

$$f(-3/2) = -13,5$$

$$g(-3/2) = -13,5$$



$$b) f(x) = g(x) \text{ leikkauspiste}$$

$$3x - 9 = 7x - 3 \quad || -7x, +9$$

$$3x - 7x = -3 + 9$$

$$-4x = 6 \quad || :(-4)$$

$$x = -\frac{6}{4} = -\frac{3}{2}$$

(3.5)

$$f(x) = \frac{2x}{-} - \frac{5}{-} \quad (= \frac{2}{-}x - \frac{5}{-})$$

(3.5)

A

• Speed-Crunch

• MAOL

$$f(x) = \frac{2x}{5} - \frac{5}{8} \quad \left(= \frac{2}{5}x - \frac{5}{8} \right)$$

$$a) f(0) = \frac{2 \cdot 0}{5} - \frac{5}{8} = -\frac{5}{8}$$

$$b) \text{ nollakohta } f(x) = 0$$

$$\overset{8j}{\frac{2x}{5}} - \overset{5j}{\frac{5}{8}} = 0$$

$$\frac{16x}{40} - \frac{25}{40} = 0 \quad || \cdot 40$$

$$\frac{\cancel{40} \cdot 16x}{\cancel{40}} - \frac{\cancel{40} \cdot 25}{\cancel{40}} = 40 \cdot 0$$

$$16x - 25 = 0$$

$$16x = 25 \quad || :16$$

$$x = \frac{25}{16}$$

$$\text{tai} \quad \frac{2x}{5} - \frac{5}{8} = 0$$

$$\frac{2x}{5} = \frac{5}{8} \quad || \text{ verranto!}$$

$$8 \cdot 2x = 5 \cdot 5$$

$$16x = 25 \quad || :16$$

$$x = \frac{25}{16}$$

$$\text{tai} \quad \frac{\cancel{2}}{\cancel{5}} x = \frac{5}{\cancel{8}} \quad || : \frac{\cancel{2}}{\cancel{5}}$$

$$x = \frac{5}{8} \cdot \frac{5}{2} = \frac{25}{16}$$

B

Saa käyttää ohjelmistaja
Geogebra, LibreOffice

(3.9)

$$\text{aamu } \frac{2}{3} \cdot x$$

$$\text{ilta } \frac{1}{5} \cdot x$$

$$\text{2. aamu } \underline{16}$$

yhteensä:
X

$$\frac{2x}{3} + \frac{x}{5} + 16 = x$$

geogebra → CAS

← ratkaise

The screenshot shows the Geogebra CAS interface. At the top, there are buttons for '=', '≈', '✓', '15/3.5', '()', '7', and a circled 'x=' button. Below these, the equation $1 \cdot \frac{2x}{3} + \frac{x}{5} + 16 = x$ is entered. To the right of the equation, the word 'yhtälö' is written. Below the equation, the solution is displayed as 'Ratkaise: {x = 120}'. The 'x=' button is circled in blue, and an arrow points from the text 'ratkaise' to it.