

Funktio

$$f(x) = \underbrace{2x + 3}$$

↑ NIMI ↑ MUUTTUJA ↑ LAUSEKE

↙ MUUTTUJAN ARVO ($x=1$)

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

↑
FUNKTION ARVO ($y=5$)

$$f(5) = 2 \cdot 5 + 3 = 13$$

$$f(-2) = 2 \cdot (-2) + 3 = -4 + 3 = -1$$

esim. $g(x) = -2x^2 - x$

$$\begin{aligned} g(3) &= -2 \cdot 3^2 - 3 \\ &= -2 \cdot 9 - 3 \\ &= -18 - 3 = -21 \end{aligned}$$

$$\begin{aligned} g(-2) &= -2 \cdot (-2)^2 - (-2) \\ &= -2 \cdot 4 + 2 \\ &= -8 + 2 \\ &= -6 \end{aligned}$$

S. 82

320

321

322

a)

x	$f(x) = x + 7$
-1	$f(-1) = -1 + 7 = 6$
0	$f(0) = 0 + 7 = 7$
2	$f(2) = 2 + 7 = 9$
5	$f(5) = 5 + 7 = 12$

$$(-x = -1 \cdot x)$$

b)

x	$g(x) = -x + 2$
-2	$g(-2) = -(-2) + 2 = 2 + 2 = 4$
0	$g(0) = -0 + 2 = 2$
1	$g(1) = -1 + 2 = 1$
4	$g(4) = -4 + 2 = -2$

c)

x	$h(x) = 3x$
0	$h(0) = 3 \cdot 0 = 0$
1	$h(1) = 3 \cdot 1 = 3$
2	$h(2) = 3 \cdot 2 = 6$
3	$h(3) = 3 \cdot 3 = 9$

d)

x	$t(x) = -2x$
0	$t(0) = -2 \cdot 0 = 0$
1	$t(1) = -2 \cdot 1 = -2$
2	$t(2) = -2 \cdot 2 = -4$
3	$t(3) = -2 \cdot 3 = -6$

321

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

$$a) x=2 \rightarrow f(2) = 3 \cdot 2 - 1 = 6 - 1 = 5$$

$$b) f(0) = 3 \cdot 0 - 1 = 0 - 1 = -1$$

$$c) f(-1) = 3 \cdot (-1) - 1 = -3 - 1 = -4$$

$$d) f(1,5) = 3 \cdot 1,5 - 1 = 4,5 - 1 = 3,5$$

322

$$g(x) = -2x + 1$$

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

$$b) g(0,5) = -2 \cdot 0,5 + 1 = -1 + 1 = 0$$

$$c) g(-2) = -2 \cdot (-2) + 1 = 4 + 1 = 5$$

$$d) g(-5) = -2 \cdot (-5) + 1 = 10 + 1 = 11$$

esim. $f(x) = 2x + 1$

$f(x) = 11$, mikä on muuttujan x arvo?

$$2x + 1 = 11 \quad \begin{array}{l} -1 \\ \hline 2x = 10 \\ \hline x = 5 \end{array} \quad \begin{array}{l} // -1 \\ // : 2 \end{array}$$

$$f(5) = 2 \cdot 5 + 1 = 11$$

325

$$g(x) = 4x - 2$$

a) $g(x) = 2$

↑

funktion
arvo

$$4x - 2 = 2$$

$$\parallel +2$$

$$4x = 4$$

$$\parallel :4$$

$$x = 1$$

b) $g(x) = -2$

$$4x - 2 = -2$$

$$\parallel +2$$

$$4x = 0$$

$$\parallel :4$$

$$x = 0$$

c) $g(x) = 0$

$$4x - 2 = 0$$

$$\parallel +2$$

$$4x = 2$$

$$\parallel :4$$

$$x = \frac{2}{4} = \frac{1}{2} (= 0,5)$$

d) $g(x) = 10$

$$4x - 2 = 10$$

$$\parallel +2$$

$$4x = 12$$

$$\parallel :4$$

$$x = 3$$

S. 83

331

332

333