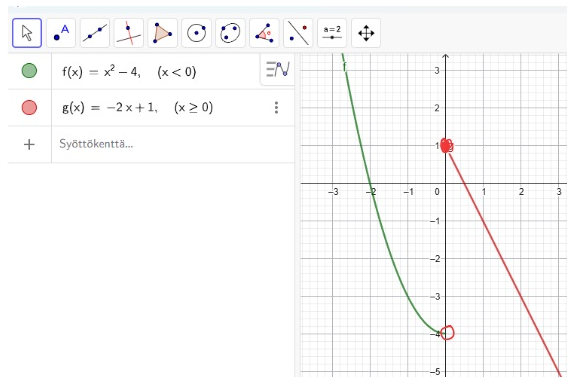


Paloittain määritelty funktio

Esim. $f(x) = \begin{cases} x^2 - 4, & \text{kun } x < 0 \\ -2x + 1, & \text{kun } x \geq 0 \end{cases}$



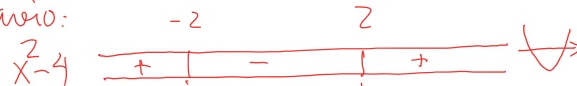
Esim.

Tiilikke funktion $f(x) = 2x + 1 - |x^2 - 4|$ paloittain
määritellynä funktiona.

Itseisarvon määritelmä:

$$|a| = \begin{cases} a, & \text{kun } a \geq 0 \\ -a, & \text{kun } a < 0 \end{cases}$$

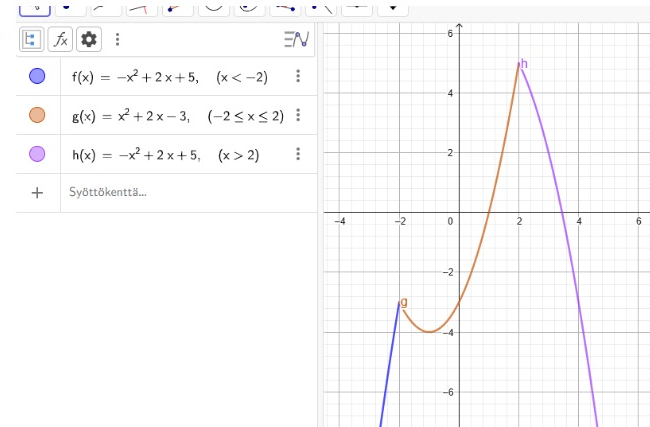
Muutokaskaavio:



$f(x)$:n kappaleita

$$\begin{aligned} 2x + 1 - (x^2 - 4) &: 2x + 1 + x^2 - 4 \\ &= 2x + 1 - x^2 + 4 & \text{TAI} & 2x + 1 - (-x + 4) \\ &= -x^2 + 2x + 5 & & = x^2 + 2x - 3 & -x^2 + 2x + 5 \end{aligned}$$

$$f(x) = \begin{cases} -x^2 + 2x + 5, & \text{kun } x < -2 \\ x^2 + 2x - 3, & \text{kun } -2 \leq x \leq 2 \\ -x^2 + 2x + 5, & \text{kun } x > 2 \end{cases}$$



1.10



Laske määrätty integraali

$$\int_0^6 |x-2| dx.$$

$$x-2=0$$

$$x=2$$

$$|x-2| = \begin{cases} -x+2, & \text{kun } x < 2 \\ x-2, & \text{kun } x \geq 2 \end{cases}$$

$$\int_0^6 |x-2| dx = \int_0^2 -x+2 dx + \int_2^6 x-2 dx =$$

$$\int_0^2 -\frac{1}{2}x^2 + 2x + \int_2^6 \frac{1}{2}x^2 - 2x = \dots$$