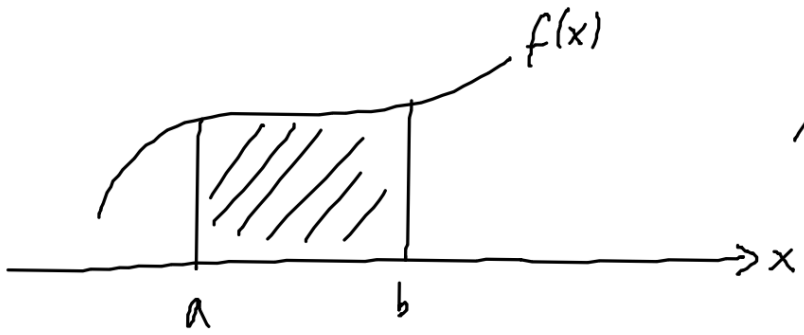
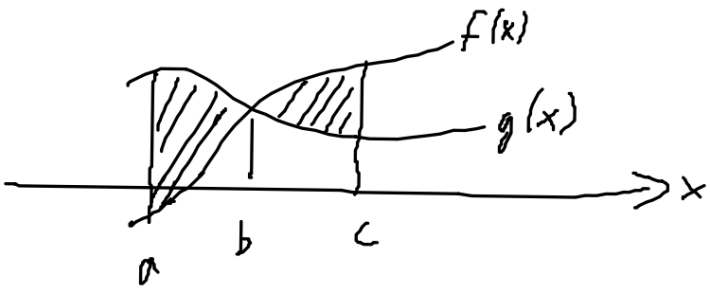
Integrointi x-akselin suunnassa



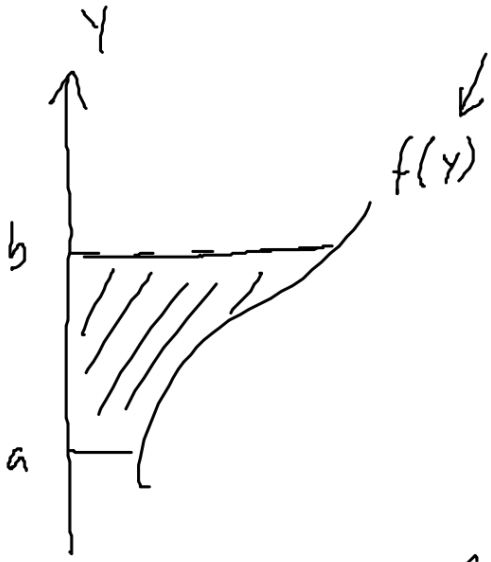
$$A = \int_a^b f(x)\,dx$$



$$A = \int_a^b g(x) - f(x)\,dx + \int_b^c f(x) - g(x)\,dx$$

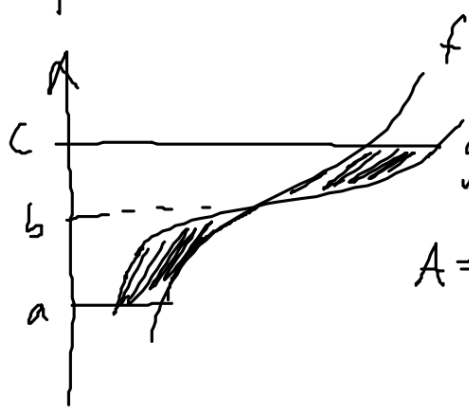
"ylempi – alempi"

Integrointi y-akselin suunnassa



Huom! Lauseke ratkaistu x:n suhteen

$$A = \int_a^b f(y)\,dy$$



$$A = \int_a^b f(y) - g(y)\,dy + \int_b^c g(y) - f(y)\,dy$$

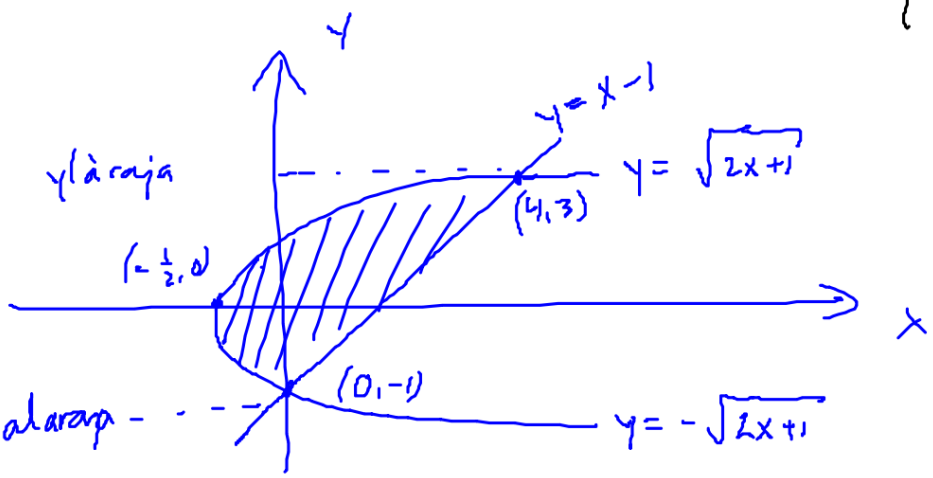
"oikean puoleinen – vasemm. puoleinen"

467.

Leikk. pisteet $\begin{cases} y^2 = 2x+1 \\ x - y - 1 = 0 \end{cases}$

Piirrä: $\begin{cases} y = \pm\sqrt{2x+1} \\ y = x-1 \end{cases}$

Integ.varsien: $\begin{cases} x = \frac{1}{2}y^2 - \frac{1}{2} \\ x = y+1 \end{cases}$



$2x+1 \geq 0$

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

Lp:t $\begin{cases} y^2 = 2x+1 \\ y = x-1 \end{cases}$

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

$x^2 - 2x + 1 = 2x+1$

$x^2 - 4x = 0$

$\begin{cases} x = 0 \\ y = -1 \end{cases}$ tai $\begin{cases} x = 4 \\ y = 3 \end{cases}$

$$A = \int_{-1}^{3} (y+1) - \left(\tfrac{1}{2}y^2 - \tfrac{1}{2}\right) dy = \int_{-1}^{3} \left(-\tfrac{1}{2}y^2 + y + \tfrac{3}{2}\right) dy = \ldots = \frac{16}{3}$$