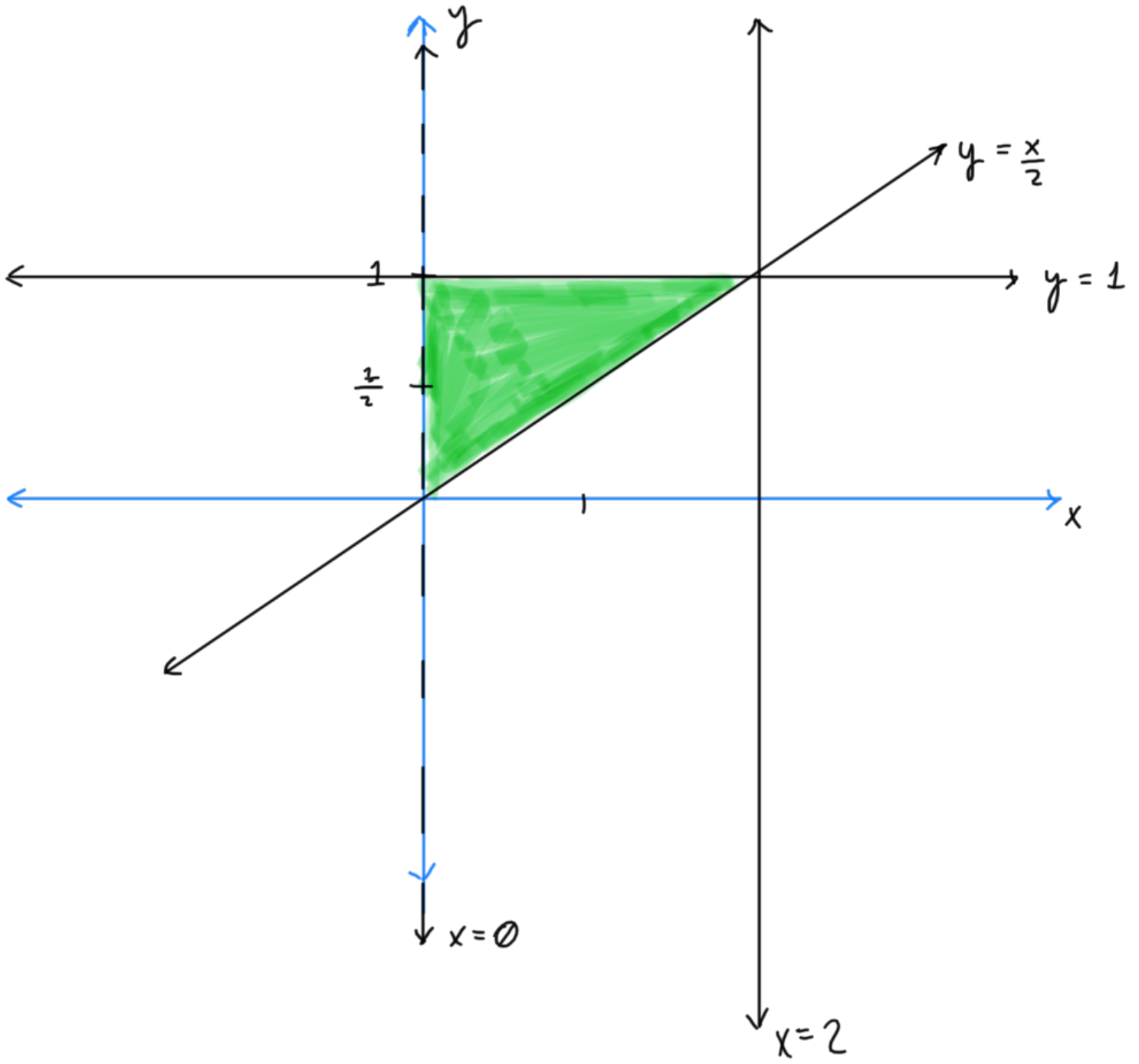
CORTO #13 - DAVID CORZO

- $\int_0^2 \int_{\frac{x}{2}}^1 \sin\left(y^2\right) dy\, dx$

$y = \frac{x}{2}$ $\quad$ $y = 1$

$x = 0$ $\quad$ $x = 2$



- $\int_{\substack{x=0 \\ x}}^{\substack{x=2 \\ 2}} \int_{\frac{x}{2}=y}^{1=y} \sin\left(y^2\right) dy\, dx$

$y = 1$ $\quad$ $y = \frac{x}{2}$ $\quad$ $x = 2$

$x = 0$ $\quad$ $x = 2y$ $\quad$ $x = 0$

$$= \int_{y=0}^{y=1} \int_{x=0}^{x=2y} \sin(y^2)\, dx\, dy$$

1. $\int_0^{2y} \sin(y^2)\, dx = \sin(y^2)\left[2y - 0\right]$

$$= 2y \sin(y^2)$$

[2] $2\int_0^2 y \sin(y^2)\,dy = \int_0^2 \sin(u)\,du = -\cos(u)\Big]_{u(0)=0}^{u(2)=4}$

$u = y^2 \rightarrow u(2) = 4$

$du = 2y\,dy \hookrightarrow u(0) = 0$

$= -\cos(4) + \cos(0) = -\cos(4) + 1$