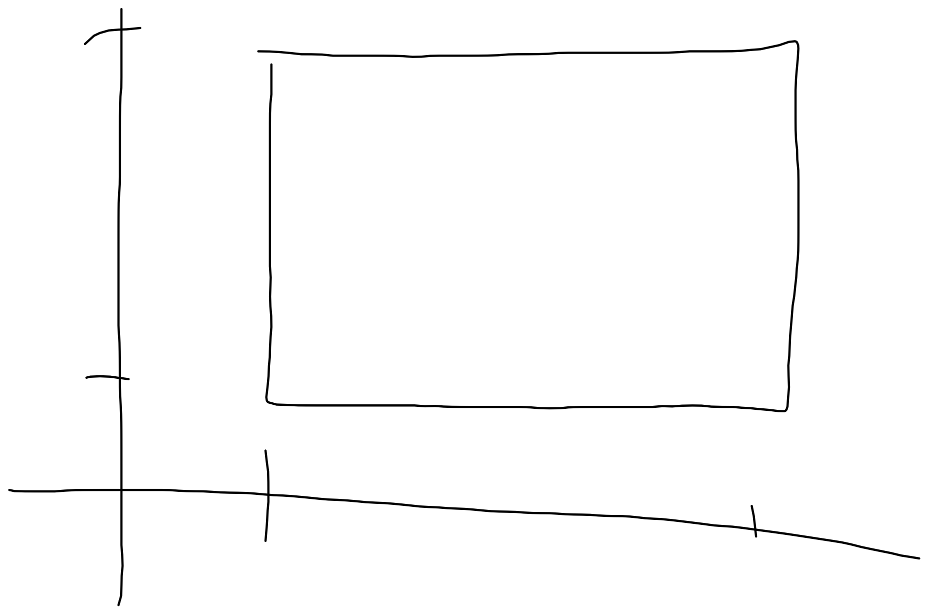
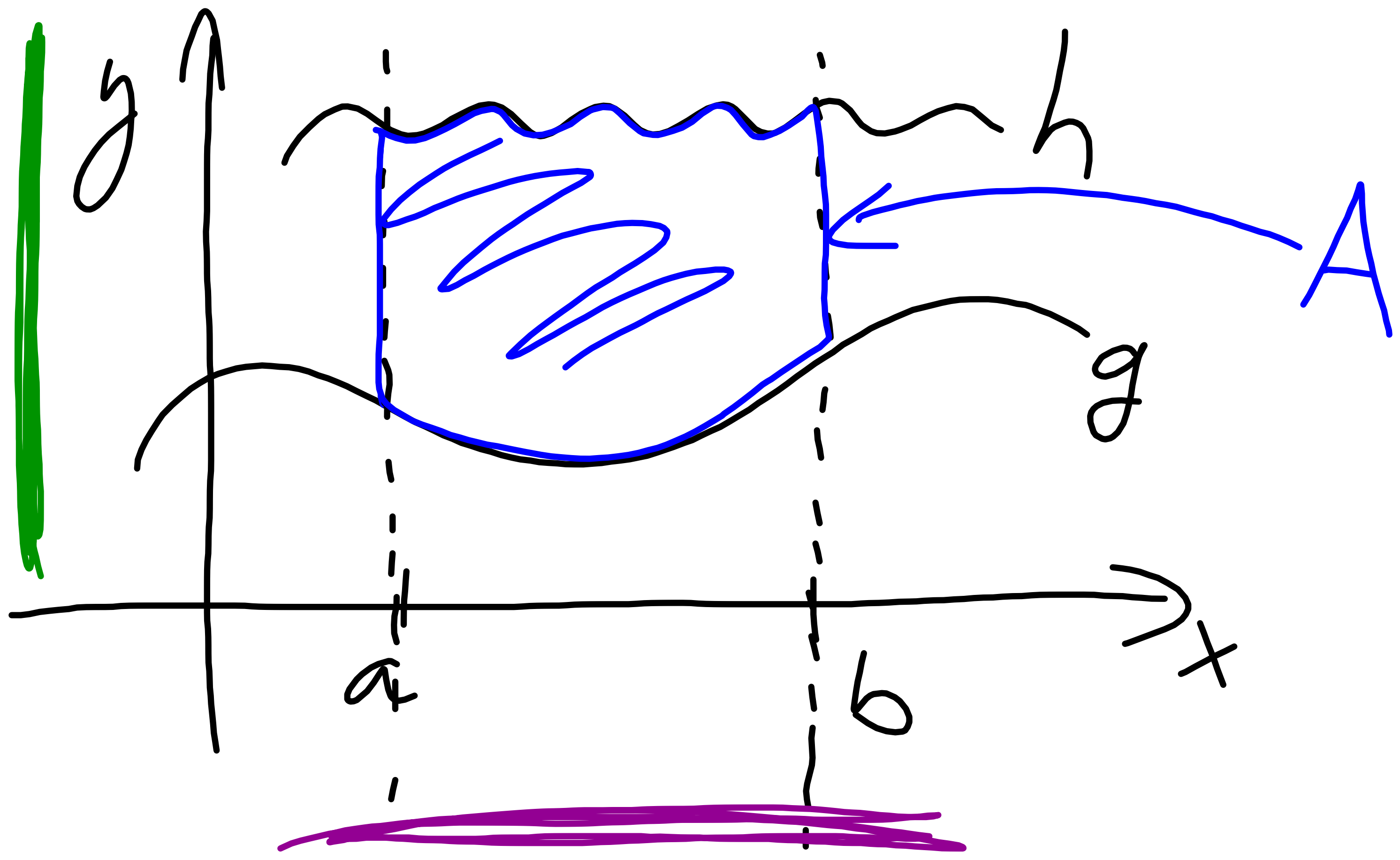
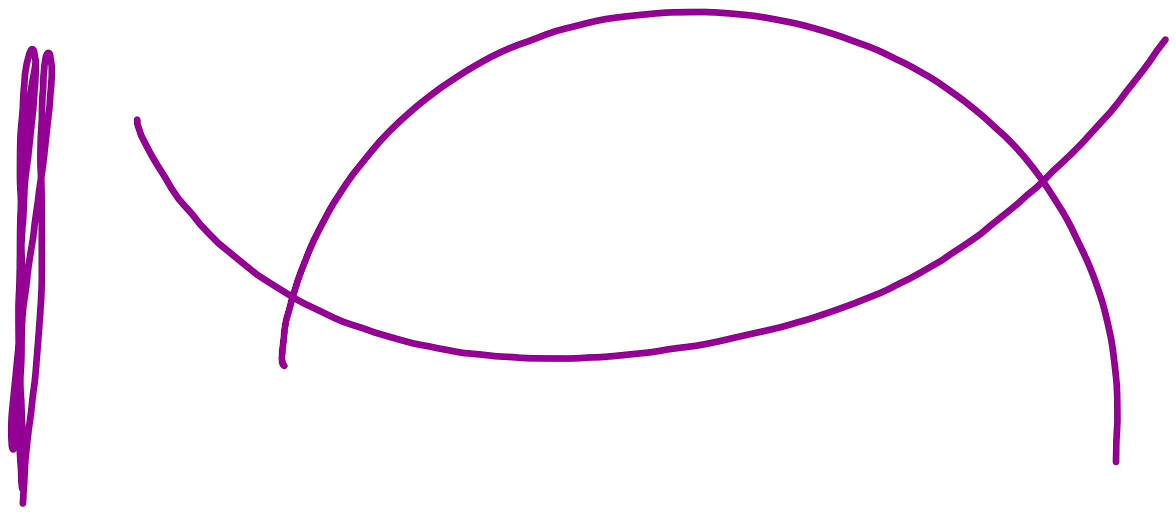


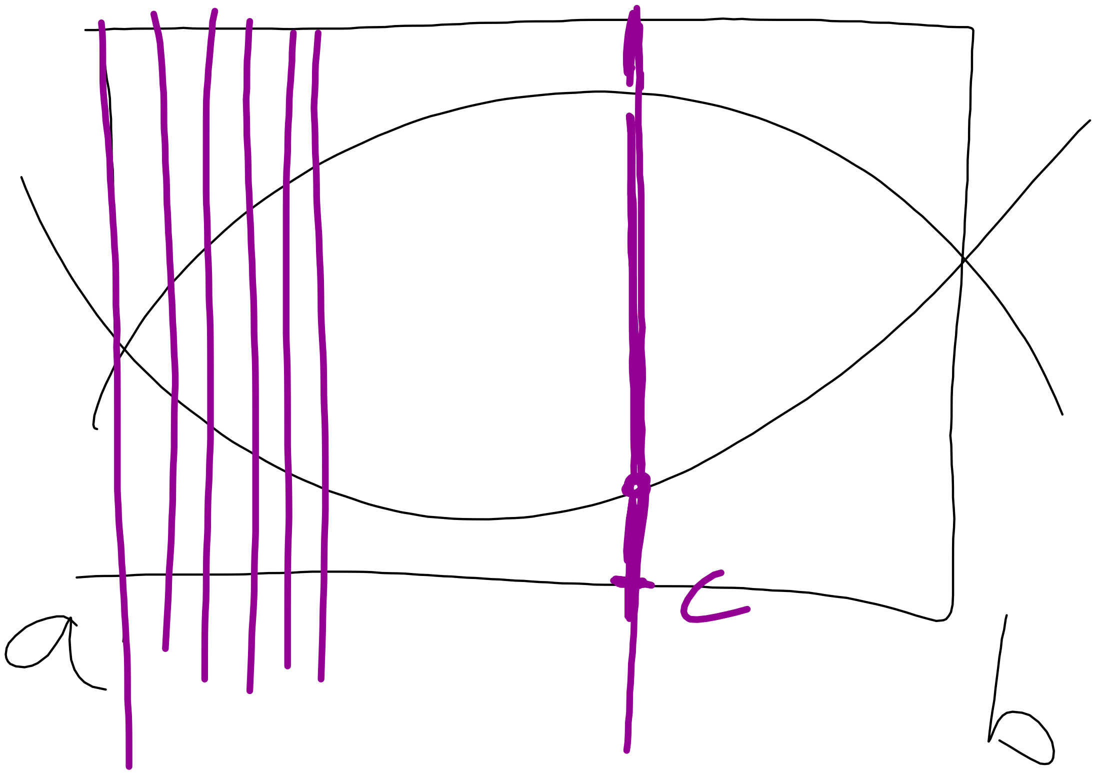

y
h
A
g
x
a
b




y
h
f
l
g
x
1
2
3
4
5

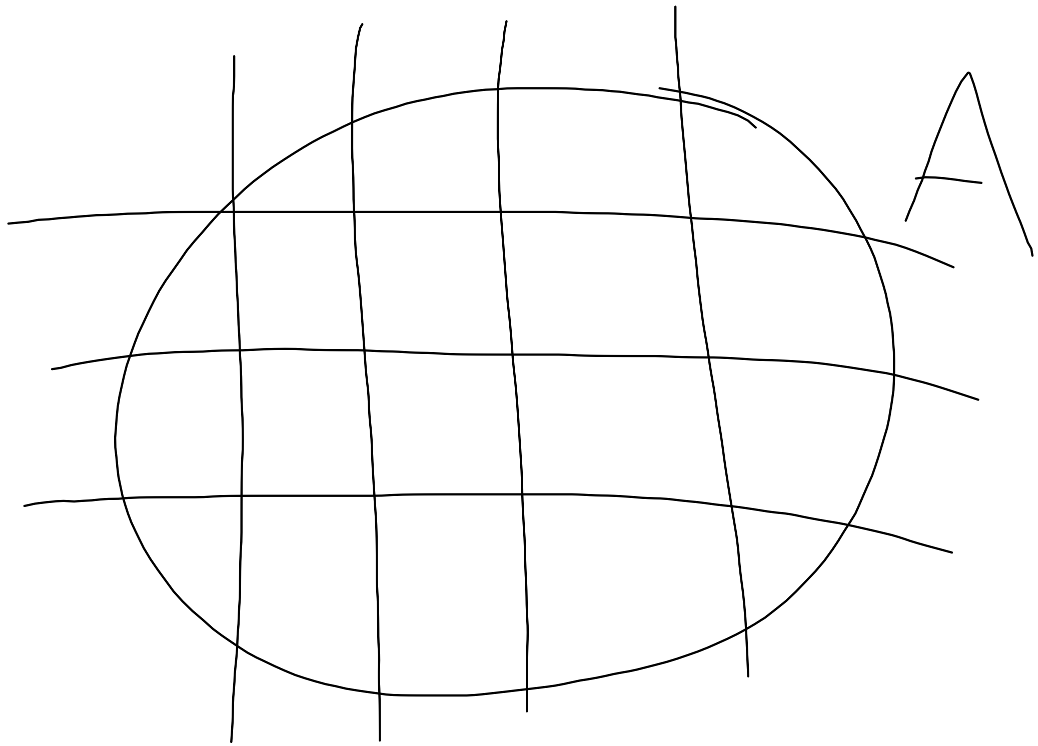
$$\int_1^2 \left[\int_{h(x)}^{f(x)} F(x,y)\,dy \right] dx +$$

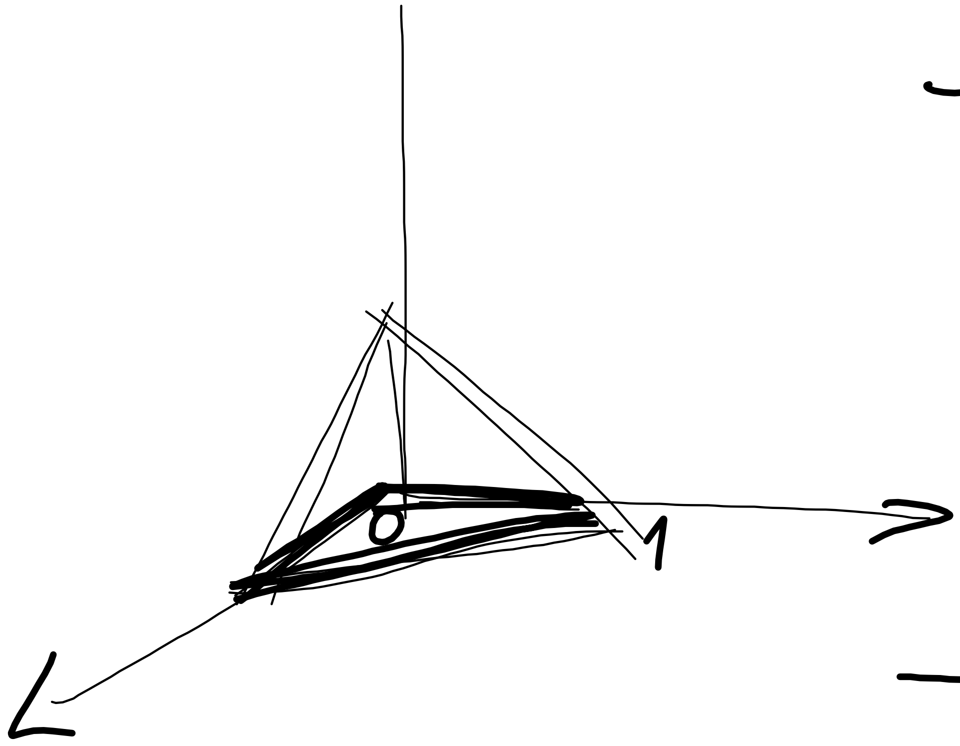
$$+ \int_2^3 \left[\int_{h(x)}^{g(x)} F\,dy \right] dx + \int_3^4 \left[\int_{l(x)}^{g(x)} F\,dy \right] dx$$

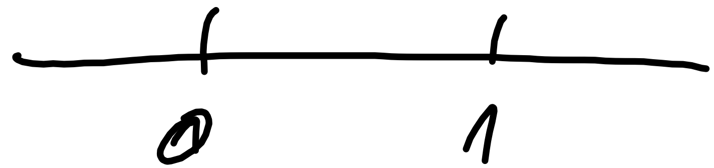

a
c
b

$$\int_0^2 \left(\int_7^{10} x^3 \, dx \right) dy = $$

$$= \int_7^{10} x^3 \, dx \cdot \int_0^2 1 \, dy$$

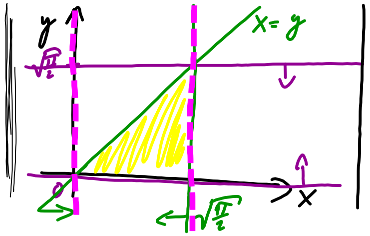

A


0
1


0
1


M
0
1

$$\int_0^{\sqrt{\frac{\pi}{2}}}\left(\int_y^{\sqrt{\frac{\pi}{2}}} y^2\cdot\sin x^2\,dx\right)dy =$$



$$= \int_0^{\sqrt{\frac{\pi}{2}}}\left(\int_0^{x} y^2\cdot\sin x^2\,dy\right)dx = \int_0^{\sqrt{\frac{\pi}{2}}}\left(\sin x^2\cdot\int_0^{x} y^2\,dy\right)dx =$$

$$= \int_0^{\sqrt{\frac{\pi}{2}}} \sin x^2\cdot\left[\frac{y^3}{3}\right]_0^{x} dx = \int_0^{\sqrt{\frac{\pi}{2}}} \sin x^2\cdot\left(\frac{x^3}{3}-0\right)dx =$$

$$= \frac{1}{3}\cdot\int_0^{\sqrt{\frac{\pi}{2}}} x^3\cdot\sin x^2\,dx = \left|\begin{matrix} t=x^2 \\ dt=2x\,dx \\ x\,dx=\frac{1}{2}\,dt\end{matrix}\right|\begin{matrix} x=\sqrt{\frac{\pi}{2}} \Rightarrow t=\frac{\pi}{2} \\ x=0 \Rightarrow t=0\end{matrix}\right| =$$

$$= \frac{1}{3}\cdot\frac{1}{2}\int_0^{\frac{\pi}{2}} t\cdot\sin t\,dt = \left|\begin{matrix} u=t & u'=1 \\ v'=\sin t & v=-\cos t\end{matrix}\right| =$$

$$= \frac{1}{6}\cdot\left\{\left[-t\cdot\cos t\right]_0^{\frac{\pi}{2}}+\int_0^{\frac{\pi}{2}}\cos t\,dt\right\} = \frac{1}{6}\cdot\left[-t\cdot\cos t+\sin t\right]_0^{\frac{\pi}{2}} =$$

$$= \frac{1}{6}\cdot\left[\left(-\frac{\pi}{2}\cdot 0+1\right)-\left(-0\cdot 1+0\right)\right] = \frac{1}{6}$$

$$f(x)=\int_0^x \sin(t^2)\,dt \Rightarrow f'(x)=\sin(x^2)$$

MACLAURIN:

$$\sin x=\sum_{n=0}^{\infty}\frac{(-1)^n\cdot x^{2n+1}}{(2n+1)!}$$

$$\sin(t^2)=\sum_{n=0}^{\infty}\frac{(-1)^n\cdot t^{4n+2}}{(2n+1)!}$$

$$f(x)=\int_0^x\left(\sum_{n=0}^{\infty}\frac{(-1)^n\cdot t^{4n+2}}{(2n+1)!}\right)dt=\sum_{n=0}^{\infty}\left(\frac{(-1)^n}{(2n+1)!}\cdot\int_0^x t^{4n+2}\,dt\right)=$$

$$=\sum_{n=0}^{\infty}\left(\frac{(-1)^n}{(2n+1)!}\cdot\left[\frac{t^{4n+3}}{4n+3}\right]_0^x\right)=\sum_{n=0}^{\infty}\left(\frac{(-1)^n}{(2n+1)!}\cdot\frac{x^{4n+3}}{4n+3}\right)=$$

$$=\frac{x^3}{3}-\frac{x^7}{3!\cdot 7}+\frac{x^{11}}{5!\cdot 11}-\frac{x^{15}}{7!\cdot 15}+\dots$$

$$\int_0^5 \int_{y^2}^{25} y \cdot \sin(x^2)\, dx\, dy = \ldots$$

$$\ldots \int x \cdot \sin x^2 \, dx \ldots$$

$$x = y^2 \Rightarrow y = \pm\sqrt{x}$$