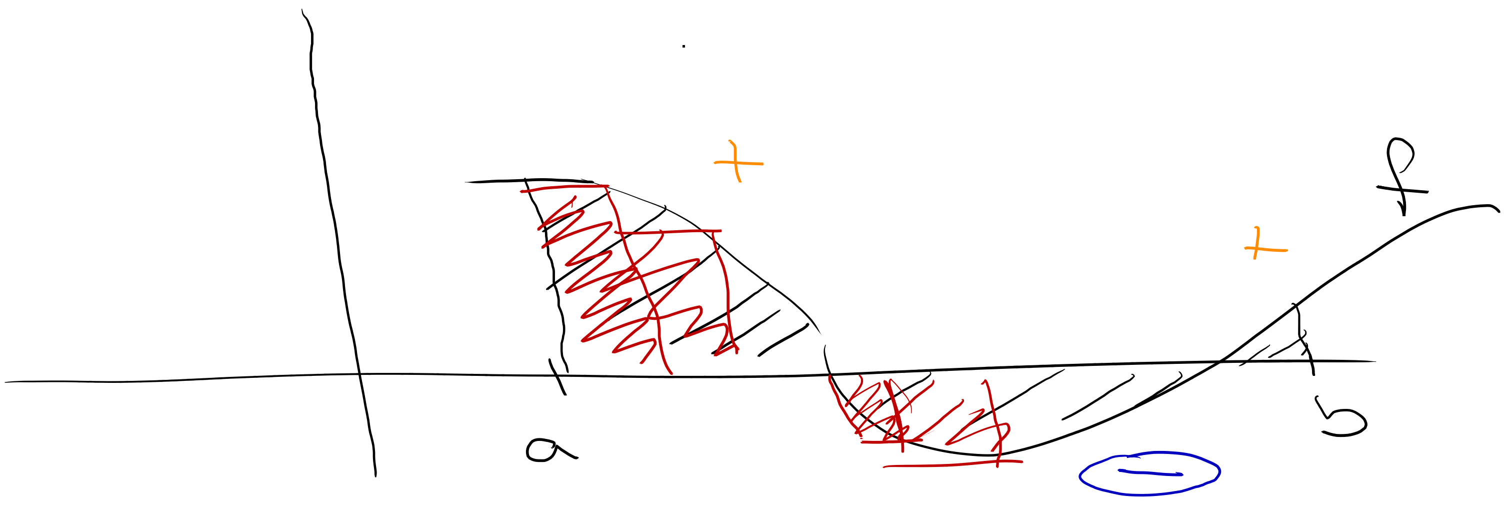
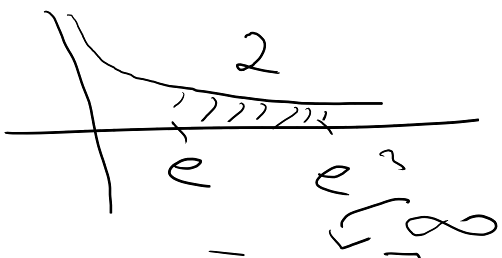


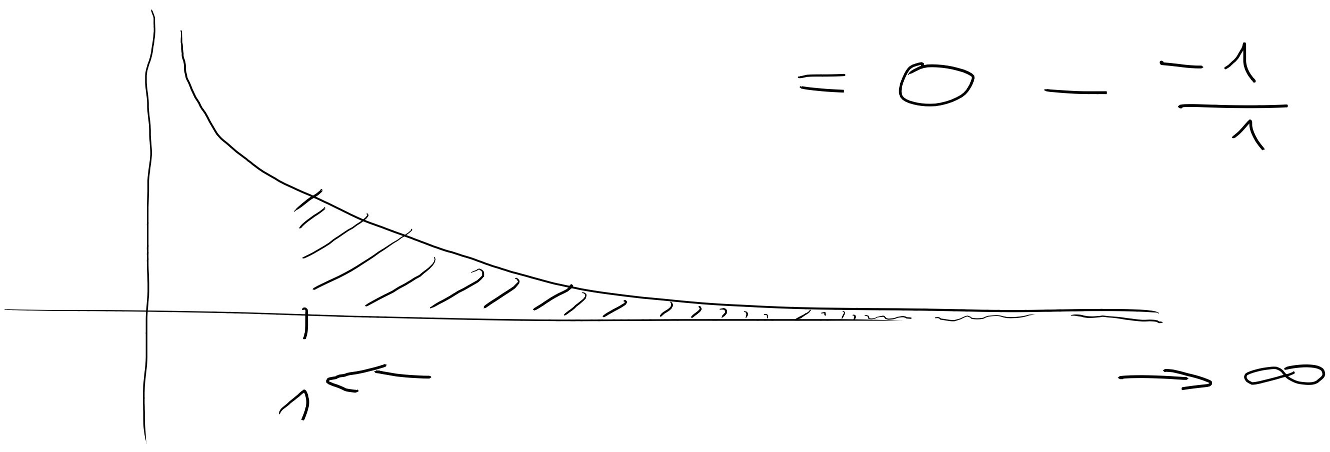
$$(N)\int_a^b f(x)\,dx = F(b) - F(a)$$

$$(N)\int_e^{e^3} \frac{1}{x}\,dx = \Big[\ln|x|\Big]_e^{e^3} = \ln e^3 - \ln e = 3-1 = 2$$



$$\int_1^\infty \frac{1}{x^2}\,dx = \Big[-\frac{1}{x}\Big]_1^\infty = \lim_{x\to\infty} -\frac{1}{x} - \lim_{x\to 1^+} -\frac{1}{x}$$

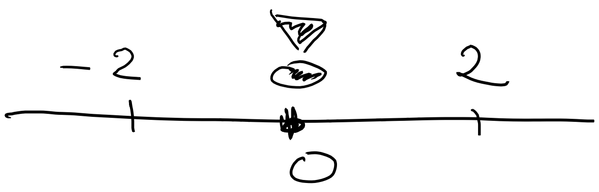
$$= 0 - \frac{-1}{1} = \underline{1}$$



- f má F na (a,b)

$$\cancel{\int_{-2}^{2} \frac{1}{x} = \Big[\ln|x|\Big]_{-2}^{2} = \ln 2 - \ln|-2| = 0}$$

$\nexists$ — funkce jen pro $\mathbb{R}\setminus\{0\}$



$\therefore$ Newton (a,b)

- $(N)\displaystyle\int_0^\infty \sin x\,dx = \Big[-\cos x\Big]_0^\infty = \lim_{x\to\infty}(-\cos x)$? neexistuje

$$- \lim_{x\to 0^+}(-\cos x)$$

$\nexists$

$$\int_{-\infty}^{\infty} x\,dx = \Big[\frac{x^2}{2}\Big]_{-\infty}^{\infty} = \lim_{x\to\infty}\frac{x^2}{2} - \lim_{x\to-\infty}\frac{x^2}{2}$$

$\nexists$

$$= \infty - \infty \;?$$

PP

$$\int_1^2 x e^x \, dx = \left[x e^x\right]_1^2 - \int_1^2 e^x \, dx$$

$u \qquad v'$

$u' = 1 \qquad v = e^x$

$$= \left[x e^x\right]_1^2 - \left[e^x\right]_1^2$$

$$= 2e^2 - 1e^1 - \left(e^2 - e^1\right)$$

$$= \underline{\underline{e^2}}$$

Substituce

$$\int_0^{\pi/2} 2 \sin(2x)\,dx = \int_{\cancel{0}\;0}^{\cancel{\pi/2}\;\pi} \sin y \, dy =$$

$y = 2x$

$dy = 2\,dx$

x	0	$\frac{\pi}{2}$
$y = 2x$	0	π

$$= \left[-\cos y\right]_0^{\cancel{\pi/2}} =$$

$$= \cancel{0}\,1 - (-1) = \cancel{1}\ \underline{\underline{2}}$$

$$\int_0^{\pi/2} 2 \sin 2x \, dx = \left[-\cos(2x)\right]_0^{\pi/2} = 1 - (-1) = \underline{\underline{2}}$$

(1) $$\int_0^4 3x^2 e^{x^3} dx = \left[e^{x^3}\right]_0^4 = e^{64} - e^0 = \underline{\underline{e^{64} - 1}}$$

$$\int 3x^2 e^{x^3} dx = \int e^y dy \overset{c}{=} e^y = e^{x^3}$$

$y = x^3$

$dy = 3x^2 dx$ 1. Věta o Subst.

(2.) $$\int_0^4 3x^2 e^{x^3} dx = \int_0^{64} e^y dy = \left[e^y\right]_0^{64} = e^{64} - e^0$$

$y = x^3$

$dy = 3x^2 dx$

$$= \underline{\underline{e^{64} - 1}}$$

x	0	4
y	0^3	4^3

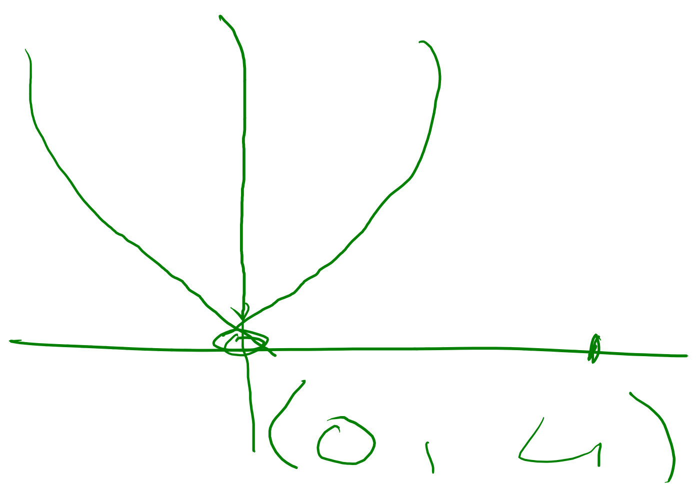
$\omega(x) = x^3$ $f(y) = e^y$

$\omega'(x) = 3x^2 \neq 0$ na (α, β)

$(\alpha, \beta) = (0, 4)$ $\boxed{\text{NA}}$

$\omega((0,4)) = (0, 64)$

$= \underline{(a, b)}$



$$\int_0^1 x\,dx = \left[\frac{x^2}{2} + C\right]_0^1 =$$

$$= \frac{1}{2} + \cancel{C} - \left(\frac{0}{2} + \cancel{C}\right)$$

$$= \underline{\underline{\frac{1}{2}}}$$