

EXERCISES 9

MATTEO RIZZI

- (1) Compute the following integrals

(a)

$$\int \left(4 \sin x - \frac{\tan x}{\cos x} \right) dx$$

(b)

$$\int \frac{1 - 2x^2}{x^3} dx$$

- (2) Compute the following limits

(a)

$$\lim_{M \rightarrow \infty} \int_0^M x e^{-x^2} dx$$

(b)

$$\lim_{M \rightarrow \infty} \int_0^M (v'_*(t))^2 dt,$$

where $v_*(t) := \tanh(t/\sqrt{2})$.

- (3) Draw the graph of the following functions

(a) $f(x) = \frac{(1-x^2)^2}{4}$

(b) $f(x) = \frac{x^2-4x+3}{x-2}$

(c) $f(x) = e^{\frac{x-1}{x-3}}$.

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