Calcolare

$\int_0^1 \frac{1}{\sqrt{x}+x}dx$ $\boldsymbol{ln4}$

$\int_0^1 lnx dx$ $\boldsymbol{-1}$

$\int_0^{+\infty} \frac{1}{1+x^2}dx$ $\boldsymbol{\frac{\pi}{2}}$

$\int_1^{+\infty} e^{-x}dx$ $\boldsymbol{\frac{1}{e}}$

$\int_0^{+\infty} e^{-2x}sin(e^{-x})dx$ $\boldsymbol{cos(1)-sin(1)}$

$\int_{-\infty}^0 \frac{1}{cosh^2x}dx$ $\boldsymbol{1}$

Stabilire se convergono

$\int_0^1 \frac{sinx}{x\sqrt[3]{x}}dx$ **converge**

$\int_0^{+\infty} \frac{lnx}{(1+x)^2}dx$ **converge**

$\int_{-\infty}^0 sin^2x dx$ **diverge**

$\int_0^1 \frac{\sqrt{e^x-1}}{(1+x)\sqrt[3]{x^2}}dx$ **converge**

$\int_0^1 \frac{coshx}{x^2}dx$ **diverge**

$\int_0^1 \frac{ln(cosx)}{x}dx$ **converge**

$\int_0^{+\infty} tanh(x)dx$ **diverge**

$\int_1^{+\infty} e^{-x^2}dx$ **converge**

$\int_0^1 e^{x^{-1}}dx$ **diverge**

$\int_1^{+\infty} \frac{cosx}{2\sqrt{x}}dx$ **converge**

$\int_1^{+\infty} \frac{1}{sinhx}dx$ **converge**

stabilire per quali valori del parametro $k > 0$ converge l'integrale improprio $\int_1^{+\infty} \frac{1}{\sqrt[5]{e^x-e}(x-1)^k}dx$

converge se $\boldsymbol{k < \frac{4}{5}}$

Considerata la funzione $f_k(x) = \frac{\sqrt{1+x}-\sqrt{x}}{x}e^{kx}$ stabilire per quali valori del parametro reale k converge $\int_1^{+\infty} f_k(x)dx$.

converge se $\boldsymbol{k \leq 0}$

Considerata la funzione $f_k(x) = \frac{(sinhx)^k}{e^{2x}-1}$ stabilire per quali valori del parametro reale k converge$\int_0^1 df_k(x)x$

converge se $\boldsymbol{k > 0}$

Considerata la funzione $f_k(x) = \frac{e^{-x}+x-1}{x^k\left(\sqrt{1+x^k}-1\right)}$ stabilire per quali valori del parametro reale k converge $\int_0^{+\infty} f_k(x)dx$

converge se $\boldsymbol{\frac{4}{3} < k < \frac{3}{2}}$