

## MATH 102 QUIZ 1

1. Compute

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{i^3}{n^4} \frac{1}{\sqrt{1 + (i/n)^2}}.$$

2. Find  $f(x)$  and the constant  $C$  if they satisfy

$$\int_{1+\ln x}^1 f(t) dt = \sqrt{x} + C$$

for all  $x > 0$ .

(3-4). Compute the following integrals

3.  $\int x^5 \sqrt{x^3 + 2} dx.$

4.  $\int_0^1 \frac{x}{1+x^4} dx$