

Quiz Math102 21.04.2008

Name
Stud ID

1) True or False? **You MUST JUSTIFY your answer FOR BOTH the true or false cases.**
If False, write the correct solution !!!

a) The average value of the function $f(x) = \tan^3 x$ T F
on the interval $[\pi/4, \pi/3]$ equals $1 - \frac{\ln 2}{2}$.

b) The improper integral $\int_0^e \frac{\sqrt{\ln(1+x)}}{x} dx$ is divergent. T F

c) $\frac{x^2 + 3}{x^2(x-3)}$ can be written in the form $\frac{A}{x^2} + \frac{B}{x-3}$. T F

2) Evaluate the following integrals:

a) $\int_0^{\pi/4} \sin^4(x) dx$

b) $\int \frac{1}{x\sqrt{1-x^2}} dx$

c) $\int \frac{dx}{x(1+x^2)^2}$

d) $\int \sqrt{x} \cdot e^{\sqrt{x}} dx$

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3) We denote by R the region bounded by the curves

$$y = x \text{ and } y = \sqrt{x}.$$

- a) Sketch the region R .
- b) Compute the area of the region R .
- c) Compute the volume of the solid S obtained by rotating R around the line $x = -1$.
- d) Compute the volume of the solid T obtained by rotating R around the line $y = 0$.

Solution:

DRAFT PAGE: here you can try your solutions.

The writing on this page **WON'T COUNT FOR THE GRADING !!!**