

Math 102
First Major Exam
Summer - 2000 TIME : 75 Minutes

1. If $f(x) = \frac{x^3}{x^2 - 1}$, then find x so $f^{-1}(x) = 2$.
2. Find $\frac{dy}{dx}$, if $y = e^{\cos^{-1}x} \ln xe^x$.
3. $\lim_{x \rightarrow 0} \frac{2^x e^x}{x^2}$
4. Sketch the region bounded by the curves $x = y^2$, and $y = x - 2$. And find its area.
5. Solve for x , where $e^{2x} - e^x - 6 = 0$.
6. $\lim_{x \rightarrow \frac{\pi}{2}} \frac{\tan x}{\sec x}$
7. Find the volume of the solid generated if the region bounded by the graphs of $y = \frac{1}{2}x$, $y = x - 1$, and $x = 3$ is revolving about the x axis.
8. $\frac{d}{dx} \int_{\tan x}^{\sqrt{x}} \frac{t^2}{t^2 - 2} dt$
9. Use logarithmic differentiation to find y' if $y = x^2 - 3 \sin x$.
10. Find the volume of the solid generated if the region bounded by the graphs of $y = \ln x$, $x = e$, and $y = 0$ is revolving about the y axis.

KFUPM — Math Dept

MATH 102-2

Summer 2001

Quiz 4 B

- (4pts)1. $\frac{1}{x^2 \sin \frac{1}{x}} dx$
- (3pts)2. $e^{3x} \cos 4x dx$
- (3pts)3. $\cot^3 x dx$