

PRACTICE EXAM 4 - MATH 112

DATE: Friday, April 8

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 3 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Find the average value of the function $f(x) = \frac{4}{\sqrt{x-1}}$ on the closed interval $[5, 10]$.
2. Evaluate the definite integrals
 - (a) $\int_0^1 x^2(x^3 + 1)^3 dx$
 - (b) $\int_1^3 \frac{1}{x(\ln x + 2)^2} dx$
3. Sketch the region bounded by the graphs of the equations $y = \frac{1}{x^2}$, $y = 4$, $x = 3$ and then find the area of the region.
4. Use the disk method to find the volume of the solid formed by revolving the region under the graph of $f(x) = e^{1-x}$ between $x = 0$ and $x = 2$ around the x -axis.
5. Compute the following integrals
 - (a) $\int x e^{-x} dx$
 - (b) $\int x^5 \ln x dx$
6. Compute the indefinite integral $\int \frac{x^2 + 12x + 12}{x^3 - 4x} dx$