Math 11B
Calculus with Applications
Fall 1998, UCSC

Nov 20, 1998

TEST 2

Time: 70min

1. Evaluate $\int e^{\theta} \cos\theta \, d\theta$.

2. For which natural numbers n, does the approximation $MID(n)$ give the exact value of $\int_0^{2\pi} \sin\theta \, d\theta$. Compute $MID(1)$, $MID(2)$, and $MID(3)$.

3. If during an epidemic people get sick at the rate of $r(t) = 1000te^{-0.5t}$, how many people get sick altogether.

4. Find the volume of the solid obtained by revolving the region bounded by $y = x^3$, $x = 1$, and $y = -1$ around the axis $y = -1$.

5. A rod of length of 3 with density $\delta(x) = 1 + x^2$ is positioned along the positive x-axis, with its left end at the origin. Find the mass and the center of mass of the rod.

6.(Extra Credit) Calculate the escape velocity of an object from the earth.

Each problem is worth 10 pts.

LaTeX ..... MG