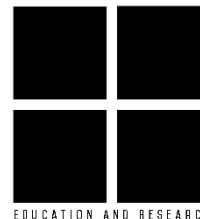


UP SCHOOL OF STATISTICS STUDENT COUNCIL

Education and Research



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Mathematics 54
First Long Exam

M54_LE1_005
Elementary Analysis II
First Semester, AY 2013-2014

I. Do the integration.

1. $\int \tan^5 x \sec^3 x \, dx$

4. $\int \sin x \sinh x \, dx$

2. $\int \frac{dx}{x^2 \sqrt{4-x^2}}$

5. $\int_{-\infty}^{\frac{3}{2}} \frac{dx}{4x^2+9}$

3. $\int \frac{dx}{x^3-x^2}$

6. $\int_0^{\frac{\pi}{6}} \frac{\cos x \, dx}{\sqrt{1-2\sin x}}$

II. A bacterial culture growing exponentially increases from 10 grams to 50 grams in the period from 7 AM to 9 AM. How many grams of bacteria is present at noon of the same day?

III. A curve passes through the point (1,2) and is orthogonal to every member of the family of curves $y^2 = kx$, $k \in \mathbb{R}$. Determine the equation of the curve.

END

Total: 40 points