UP SCHOOL OF STATISTICS STUDENT COUNCIL

Education and Research





Werho.weebly.com erhomyhero@gmail.com /erhoismyhero

Mathematics 54 First Long Exam

M54-LE1-003 Elementary Analysis II First Semester, AY 2014 -2015

Direction: Do as indicated. Show complete and clear solution to get full points. Box your final answers.

1. Evaluate the following integrals. (7 points each)

$$i. \int_0^{\pi/6} x \tan^2 3x \, dx$$

ii.
$$\int \frac{2x^2 - 2x - 1}{x^3 - x^2} dx$$

iii.
$$\int \frac{1}{x^2 \sqrt{9 - 4x^2}} \, dx$$

iv.
$$\int_0^\infty \frac{e^{-\sqrt{x}}}{\sqrt{x}} dx$$

- 2. Find the orthogonal trajectories for the family of curves, $\sin^2 y = k \ln x$. (6 points)
- 3. Solve the differential equation. (6 points)

$$\frac{y'\cos y}{\sin x} = \frac{x^2}{\sin^2 y}$$

-END OF EXAM-