King Saud University
Faculty of Sciences
Department of Mathematics

First Examination Math 106 Semester I 1441-1442
Time: 2H

1. Use simpson's rule with $n = 6$ to approximate the integral $\int_0^{2\pi} \sin^4(x)dx$.

2. Compute the integral $\int \frac{\ln(x)+1}{1+(x\ln x)^2}dx$.

3. Evaluate the integral $\int \frac{x+\sin^{-1}x}{\sqrt{1-x^2}}dx$.

4. Compute the integral $\int \frac{x^2}{\sqrt{1+x^6}}dx$.

5. Evaluate the integral $\int \frac{dx}{\sqrt{4-e^x}}dx$.

6. Compute the integral $\int \sin^5 x\cos^2 x dx$.

7. Find the limit $\lim_{x\to+\infty}(1+\frac{7}{x})^{5x}$.

8. Evaluate the integral $\int x^2\log_3 x dx$.

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

10. Compute $\frac{dy}{dx}$ if $y = (\cos x)^x$.

11. Evaluate $\int \frac{7x+10}{(x+1)(x^2-4)}dx$.