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

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