

Mathematics 1120H – Calculus II: Integrals and Series
TRENT UNIVERSITY, Winter 2019

Quizzes

Quiz #1. Friday, 18 January. [10 minutes]

Compute each of the following integrals.

1. $\int_0^{\pi/2} \cos(x)\sqrt{\sin(x)} dx$ [3] 2. $\int \frac{1}{x\ln(x)} dx$ [2]

Quiz #2. Friday, 25 January. [10 minutes]

1. Compute $\int_{-1}^0 x^2 e^{x+1} dx$. [5]

Quiz #3. Friday, ~~32 January~~ 1 February. [12 minutes]

Compute each of the following integrals.

1. $\int_0^{\pi/4} \tan^2(x) dx$ [2.5] 2. $\int_0^{\pi/2} \cos^3(x) \sin^2(x) dx$ [2.5]

Quiz #4. Friday, 8 February. [10 minutes]

1. Compute $\int \frac{1}{\sqrt{4x^2 + 8x + 8}} dx$. [5]

Quiz #5. Friday, 15 February. [17 minutes]

1. Compute $\int \frac{x^2 + x + 5}{(x^2 + 4)(x + 1)} dx$. [5]

Quiz #6. Friday, 8 March. [12 minutes]

1. Consider the region below $y = \sqrt{x}$ and above $y = 0$ for $0 \leq x \leq 1$. Find the volume of the solid obtained by revolving this region about the y -axis. [5]

Quiz #7. Friday, 15 March. [15 minutes]

Determine whether each of the following series converges or diverges.

1. $\sum_{n=0}^{\infty} e^{-n}$ [2.5] 2. $\sum_{n=0}^{\infty} \frac{1}{1+n^2}$ [2.5]

Quiz #8. Friday, 22 March. [15 minutes]

Determine whether each of the following series converges or diverges.

1. $\sum_{n=2}^{\infty} \frac{(-1)^n}{n\ln(n)}$ [2.5] 2. $\sum_{n=0}^{\infty} \frac{3^n}{2^n + 5^n}$ [2.5]

Quiz #9. Friday, 29 March. [10 minutes]

1. Determine for which values of x the series $\sum_{n=0}^{\infty} n3^n x^n$ converges. [5]

Quiz #10. Friday, 5 April. *[15 minutes]*

1. Find the Taylor series about $a = 0$ of $f(x) = \frac{1}{(x+1)^2}$. *[3]*

2. Find the radius and interval of convergence of this Taylor series. *[2]*