

Dawson College
Mathematics Department

1.

2. a. [4 marks] Using the limit of a Riemann Sum, evaluate:

b. [1 mark] Check the correctness of your answer in a. using the Fundamental Theorem of Calculus (Evaluation Theorem).

[4 marks] Find the average value of the function
over the interval $[-1, 1]$.

[3 marks] If f is continuous on $[a, b]$ show that

—

[3 marks] Given

—

, k - constant

Find the function

Evaluate the improper integral or show it diverges.

a. [4 marks] _____

b. [4 marks] _____

[4 marks] Find the area of the region enclosed by the graphs of the following functions.

Consider the region enclosed by the curve and the line

- a. [3 marks] Set up, but do not evaluate the integral for the volume of the solid when the given region is rotated about the y axis;

10. [4 marks] Determine whether the sequence converges or diverges. If it converges, find the limit.

11. For each of the following series, determine whether the series converges or diverges. State which test you are using for each problem.

a. [4 marks]

b. [4 marks]

c. [4 marks]

12. [5 marks] Determine whether the series converges absolutely, converges conditionally, or diverges. State which test you are using.

13. [5 marks] Find the radius of convergence and the interval of convergence of the following power series.

14. [5 marks] Find the sum of the following series if it converges or show it diverges.

[5 marks] Find the Maclaurin series representation of

Answers:

1.

a. -