

**ALBERTA DISTANCE LEARNING CENTRE**  
**Mathematics 31 Online**  
**MAT3211**  
**Unit 7A Assignment**

<b>Student's Questions and Comments</b>

<b>FOR STUDENT USE ONLY</b>
(if label is missing or incorrect) <b>File Number:</b> _____

**Apply Assignment Label Here**

**Name** \_\_\_\_\_

**Address** \_\_\_\_\_

**City/Town** \_\_\_\_\_ **Province** \_\_\_\_\_ **Postal Code** \_\_\_\_\_

**Please use the pre-printed label for this  
course and Assignment**

<b>FOR ADLC USE ONLY</b>
<b>Assigned to</b> _____
<b>Marked by</b> _____
<b>Date received</b> _____

**Summary**

	Marks Earned	Total Marks	Percent
Unit 7A Assignment		<b>78</b>	

<b>Teacher's Comments:</b>
_____ <b>Teacher's Signature</b>

## CANADIAN CATALOGUING IN PUBLICATION DATA

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Mathematics 31 Online

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Unit 7A Assignment

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Alberta Distance Learning Centre website:

**<http://www.adlc.ca>**

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# **Mathematics 31 Online**

## **Unit 7A Assignment**

### **Integrals Part 1**

# Instructions for Submitting Assignments

1. Submit Assignments **regularly** for assessment.
2. Submit only **one Assignment at a time**. This allows your teacher to provide feedback that you can apply to subsequent course work and exams.
3. Check that your **Assignment is complete**. Your Assignment will be returned as **incomplete** if a reasonable attempt with relevant work has not been made. Therefore, **do not leave any questions blank**. Contact your teacher for help **prior** to submitting this Assignment.
4. Attach the correct address label or complete the Assignment coversheet.
5. Submission Methods:

**Postal Mail** – Mail the completed Assignment to an Alberta Distance Learning Centre office. Ensure that you attach sufficient postage by having the envelope weighed at the post office.

**Electronically** – Scan the completed Assignment. Save the file to your computer as **Math 31 Assignment# FirstInitial LastName**. Then, upload the file into your marker's dropbox.

**In Person** – Drop the completed Assignment at an Alberta Distance Learning Centre campus.

**Fax** – Fax the completed Assignment to an Alberta Distance Learning Centre campus.

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# Mathematics 31 Online

## Unit 7A Assignment

### Our Pledge to You:

Enrolling in this course is another step toward an Alberta High School Diploma. Everyone at Alberta Distance Learning Centre is committed to helping students achieve their educational goals. We welcome your contact in person or by phone, fax, e-mail, voice mail, or postal mail.

### Advice:

Your achievement in this course is determined by your success in the assessments of each unit. Your responses to assignments indicate your understanding of outcomes established by Alberta Education.

- Before responding to the assigned questions, read all relevant directions for the Assignment and instruction in the course materials, including the appropriate Guide for Learning and any other resources provided.
- When you encounter difficulties, re-read the directions for the Assignment and review the relevant instruction in the Guide for Learning.
- If you require further clarification, contact your Alberta Distance Learning Centre teacher for assistance.

### Notice:

You have one opportunity to submit each Assignment.

- Only under exceptional circumstances will your ADLC teacher re-assess your work. Therefore, apply significant effort to each Assignment.
- If your final exam mark is vastly different from your Quiz marks, your teacher may apply discretion in determining your course mark.

## Format

You are encouraged to **handwrite** your written work.

If you type your work, be sure to follow these guidelines:

- Include your full name and student file number as a document header.
- Double-space your final copy.
- Staple your printed work to this Assignment.

## ADLC Plagiarism Policy (ADLC Administrative Policy 60–1)

Plagiarism is the practice of representing someone else's work or ideas as one's own. It is an academically dishonest practice and is detrimental to a student's knowledge and skill development. ADLC takes a progressive approach to plagiarism to educate and correct the behaviour.

All incidents will be documented and are subject to the consequences outlined below:

First Incident	Second Incident	Third Incident
The student is given zero scores on any work suspected of being plagiarized and given the opportunity to resubmit original work.	The student is given zero scores on any work suspected of being plagiarized and is not given the opportunity to resubmit original work. A letter is sent by the principal to parents and school facilitators outlining this administrative practice and the consequences.	The student is removed from the course in which plagiarized work is suspected and notifications are put into the ADLC Student Information System, barring future registration to the course in question. A withdrawal letter is sent by the principal to parents and school facilitators.

## Important

While removal from a course is limited to the course in which the third incident has occurred, the preceding steps can occur across different courses. A student who has been found plagiarizing in Course A and held to the First Incident consequences who then plagiarizes in Course B will move to the Second Incident consequences.

Any further occurrences after the Third Incident in any other courses will result in immediate removal from that course. Ongoing occurrences may result in removal from all courses and barring of registration with ADLC.

## Sharing of ADLC Work (ADLC Administrative Policy 60–4)

Plagiarism is the practice of representing someone else's work or ideas as one's own. It is a dishonest practice and is damaging to a student's knowledge & skill development. Plagiarism is addressed in ADLC Administrative Policy 60-01.

The sharing of school work, especially after having been marked by ADLC, to students for the purposes of submitting plagiarized work (either paraphrasing or directly copying student work) is dishonest, and this sharing goes against the Alberta School Act's expectation of students to respect school rules and co-operate with how schools offer education to their students.

ADLC prefers to take a progressive approach to the sharing of work with other students, in order to educate and correct the behaviour.

If a student is currently enrolled in any ADLC course and found to be sharing school work, whether from their current course or another, to others, the following will happen:

### First Incidence

The student is informed that their work has been submitted as plagiarized work by another student; a warning is provided that further submissions of such work, from any course, will be grounds for removal from the current course(s).

### Second Incidence

The student is removed from all active ADLC courses.

If the student is not currently enrolled in any ADLC course and found to be sharing school work with others, they are informed that their work has been submitted as plagiarized work by another student and, as such, further registrations in any ADLC course will not be permitted. The incident will be recorded on the student's file.

Such actions do not limit ADLC to pursue other remedies (actions), either criminal or civil, for the distribution of its copyrighted materials.







## Unit 7A Assignment

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Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

As your final exam does not allow calculators, it is best to attempt all questions in this *Assignment* without a calculator.

Be sure to proofread your assignment carefully.

For full marks, show all calculations, steps, and/or explain your answers.

Total: 78 marks.

1. Find the general antiderivative of each of the following.

①

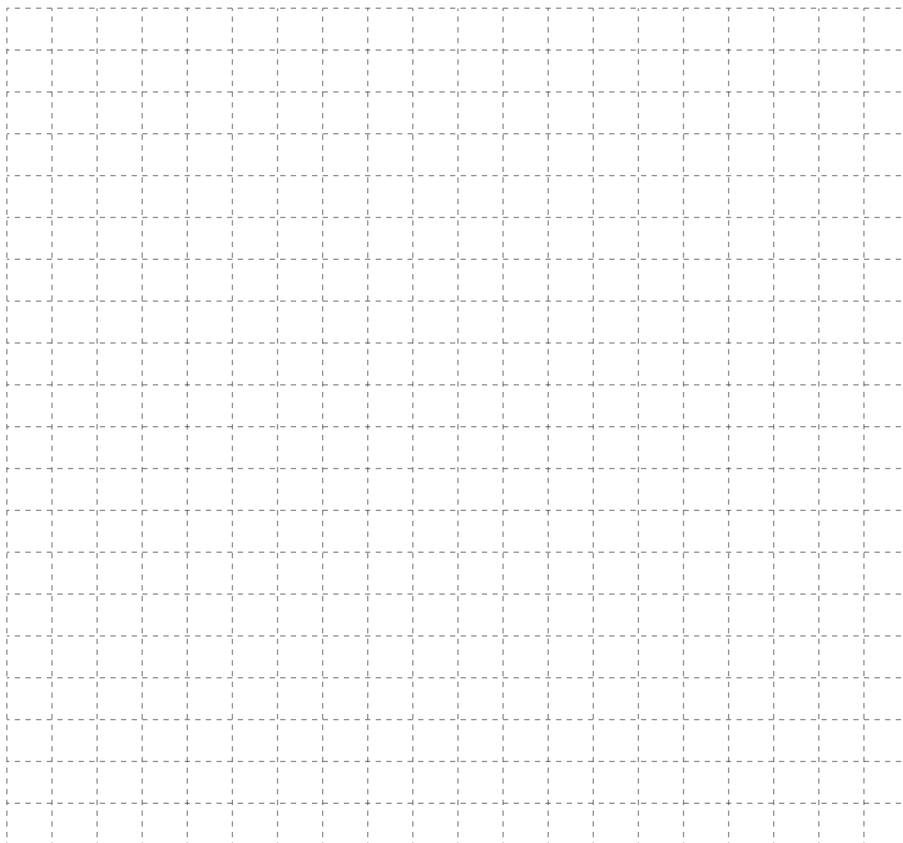
a.  $\int \sqrt[3]{x^4} \, dx$

①

b.  $\int x^{-3} \, dx$

2 c.  $\int \frac{x^2 + 5x^3 - 7}{x^2} dx$

- 4 2. Using three different values for the constant  $C$ , draw the graph of the general antiderivative of  $f(x) = -4x + 2$ .



3. Determine the  $x$ -intercepts of the curve that passes through the point  $(2, -12)$  and has a slope defined by  $y = 2x - 3$ .

4. Integrate each of the following.

a.  $\int (3x^3 + 4x^2 - 2x^{-1} + 13) dx$

b.  $\int (e \sin x + \sqrt{2} \cos x) dx$

5. Use the comparison technique to evaluate each of the following.

3

a.  $\int x(3x^2 - 7)^{-2} dx$

3

b.  $\int (1 - x)^{\frac{1}{2}} dx$

6. Use the method of integration by substitution to find each of the following.

3

a.  $\int x^2(x^3 + 5)^7 dx$

3

b.  $\int \tan x \sec^2 x dx$

7. Evaluate each of the following.

2

a.  $\int_0^1 (x^2 + e^{3x}) dx$

4

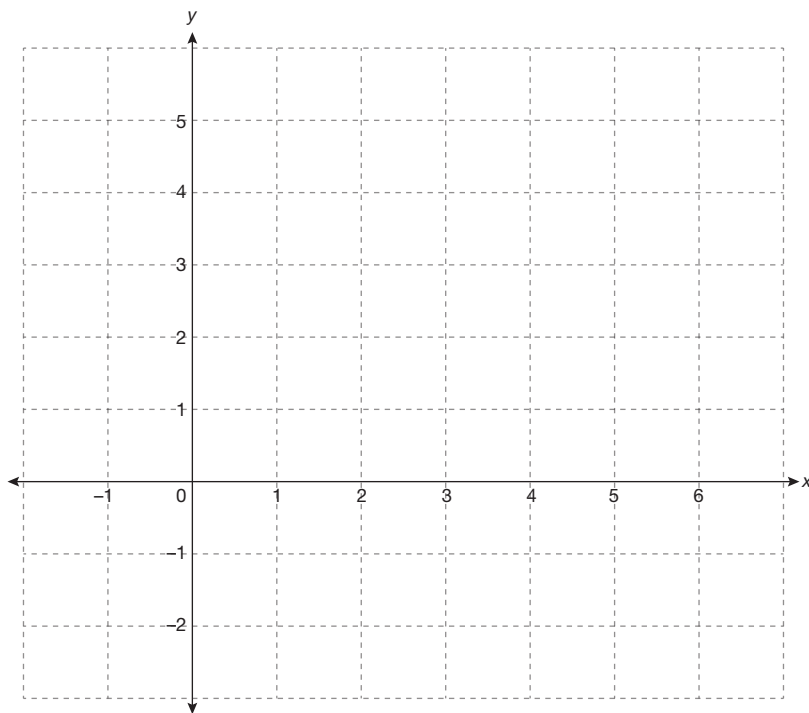
b.  $\int_0^\pi \cos^8 x \sin x dx$

4 c.  $\int_0^1 x\sqrt{1-x^2} \, dx$

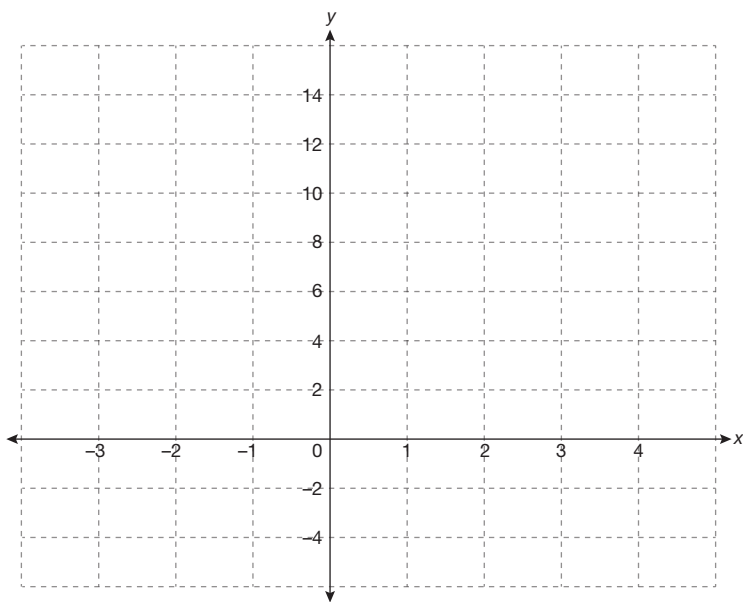
- 6 8. Calculate the area bounded by the curve  $f(x) = 3x^3 + 2x^2 + x$  and the  $x$ -axis, between  $x = 0$  and  $x = 1$  by finding the limit of the sum of the areas of inscribed rectangles as the number of rectangles increases without bound.



9. Find the exact value of the area bounded by the curve  $f(x) = 4x - x^2$  and the  $x$ -axis. Sketch a graph to illustrate the solution.



- 5 10. Find the total area enclosed by the curve  $f(x) = x^3 - 4x$  and the  $x$ -axis, between the lines  $x = -2$  and  $x = 3$ . Sketch a graph to illustrate the solution.



- ③ 11. Find the area enclosed by the curves  $y = e^x$  and  $y = x^2 - 1$ , between  $x = 1$  and  $x = -1$ .

12. Use integration by parts to find each of the following.

3

a.  $\int x \cos 5x \, dx$

3      b.  $\int \frac{x}{\sqrt{x-1}} dx$

13. Use integration by partial fractions to find the following.

4

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

4      b.  $\int \frac{6}{x^3 + 3x} dx$

14. Integrate each of the following.

2

a.  $\int \left( \frac{3}{x} - \frac{5x^2}{3} + x^{-\frac{2}{5}} \right) dx$

3

b.  $\int \frac{dx}{(6-5x)^2}$



3 c.  $\int (2 + 5x)e^{\frac{1}{3}x} dx$

4 d.  $\int \frac{2x-1}{(x-2)^2} dx$

# ADLC

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