

Final

Practice Version

Due: April 3

Total Points: 120

Instructions:

- (1) Please write your responses as neatly as possible.
- (2) If you are uploading photos, make sure you can read the images before you submit them.
- (3) If we can't read your work, we can't give you points.

How to submit: This is exactly like the crowdmark practice test. You can either:

- Print this test out and complete as normal. When done, scan/photo each question/page and upload to crowdmark using the link they sent you by email.
- Solve each question using your own blank paper. When done, scan/photo each question/page and upload to crowdmark using the link they sent you by email.
- Use a tablet with a stylus to answer questions directly on the pdf file emailed to you by crowdmark. When finished, upload the file to crowdmark using the link they sent you by email.

Code of honour: I am trusting that you are all not cheating for this exam. Punishment for this exam will be much harsher than the previous exam. You are more than welcome to use the notes from class to help you answer the questions (in fact, I encourage it!) But please don't talk to one another nor should you use the internet to ask for solutions to the problems. I trust in you all.

You can find York's Senate Policy on Academic Honesty at:

<https://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>

By completing and submitting this exam, you acknowledge that you have read this policy, and that you have completed this exam individually and have not used or referred to any unauthorized aid, including plagiarized information from other sources, nor has anyone else written or assisted you with this exam. Should you be found to have referred to or used any unauthorized aid, or that you did not complete this exam individually, you will be in breach of York's Senate Policy on Academic Honesty. You also acknowledge that this exam is copyrighted which means you cannot put any test questions in the public domain without the permission of the instructor.

Exercise 1 (20 points) Write the following formula using Σ notation. Then, using the fact that $f(x) = 3(x - 1)^4 + 3(x - 1)^3$ and the summation formulas, find the result.

$$f(2) + \frac{f(3)}{4} + \frac{f(4)}{9} + \frac{f(5)}{16}$$

Exercise 2 (20 points) Find the following limit.

$$\int \sec(x)^2 + \frac{1}{x} + \frac{1}{\sqrt{x^2 - 1}} dx$$

Exercise 3 (40 points) Find the following integral using substitution.

$$\int_1^2 \frac{\arctan(\ln(x))}{(\ln(x)^2 + 1)x} dx$$

Exercise 4 (20 points) Use the squeeze theorem to find the following limit.

$$\lim_{x \rightarrow -\infty} -\frac{(x^7 + x^6 - x^5) \sin(x)^4}{6x^7 - x^4 - x^3 - 27}$$

Exercise 5 (20 points) What is the general formula for an anti-derivative of:

$$f(x) = -\csc(x)^2 + \frac{x^9 + 2x^{\frac{1}{9}}}{x^2} + \frac{1}{x \ln(3)}$$