

Test Number:

MA 16020

Exam 3

Spring 2023

Student's Name: _____ Section Number: _____

1. Fill out your name and section number in the space provided above. On the scantron, fill in **your name, section number, test number and student ID**. Sign your name.
2. You can write on this exam booklet. Turn in both your scantron and your exam booklet when you are done. Note: **you will be graded ONLY based on your scantron answer sheet**.
3. Only a TI-30Xa scientific calculator is allowed. NO other electronic devices are allowed. No books or notes are allowed.
4. The exam is self-explanatory. Please do not ask the instructor to interpret any of the exam questions.
5. There are 12 questions. You will have 60 minutes to complete the exam. Good luck!

Section #	Time	Instructor
038	2:30-3:20	Josiah Banks
001	3:30-4:20	Josiah Banks
002	11:30-12:20	Alexandra Cuadra
003	12:30-1:20	Alexandra Cuadra
013	8:30-9:20	Susitha Karunaratne
014	1:30-2:20	Susitha Karunaratne
090	12:30-1:20	Dave Norris
999	Online	Dave Norris

$$\begin{aligned}\frac{1}{1-x} &= \sum_{n=0}^{\infty} x^n, |x| < 1 = 1 + x + x^2 + x^3 + \dots \\ e^x &= \sum_{n=0}^{\infty} \frac{x^n}{n!} = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots \\ \sin x &= \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{(2n+1)!} = \frac{x}{1!} - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots \\ \cos x &= \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!} = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots \\ \ln(1+x) &= \sum_{n=1}^{\infty} (-1)^{n-1} \frac{x^n}{n} = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \dots\end{aligned}$$