

Assigned date: 10/25/2021 9am
Due date: 11/01/2021 5pm

Last name: _____
First name: _____
Section: _____

Question:	1	2	3	Total
Points:	20	15	15	50
Score:				

Instructions: You must answer all the questions below and upload your solutions (in a PDF format) to Gradescope (go to www.gradescope.com with the Entry code GEK6Y4). Be sure that after you scan your copy, it is clear and readable. You must name your file like this: `LASTNAME_FIRSTNAME.pdf`. A homework may not be corrected if it's not readable and if it's not given the good name. No other type of files will be accepted (no PNG, no JPG, only PDF) and no late homework will be accepted.

Make sure to show all your work!

Good luck!

QUESTION 1

(20 points)

Approximate $\sqrt{3}$ with Newton's method.

- (a) (5 points) Explain why we can't use $x_0 = 0$ as an initial guess.
- (b) (10 points) Use the starting point $x_0 = 20$ and do 5 iterations.
- (c) (5 points) How many iterations are required to obtain an approximation of $\sqrt{3}$ right for 10 decimal places? (You can use a spreadsheet to do that. Make sure to join your spreadsheet to your homework as a justification of your work.)

QUESTION 2

(15 points)

- (a) (5 points) Express each sum with the summation $1 + 1/3 + 1/5 + 1/7 + 1/9 + 1/11 + 1/13$ in compact form with the symbol \sum .
- (b) (5 points) Express each sum with the summation $1 + 4 + 7 + 10 + 13 + 16 + 19 + 22$ in compact form with the symbol \sum .
- (c) (5 points) Expand the expression $\sum_{k=0}^n (\frac{k+1}{2})^2$.

QUESTION 3

(15 points)

Using the definition of the integral and the upper sums, compute the following definite integral

$$\int_1^2 x \, dx.$$