cument car McGill (University Universi

Winter 2022 — MECH309 Project

Deadline April 8th, 2022 at 6pm on MyCourses.

Instructions Write a final report (LateX, LibreOffice, Word...) with relevant explanations, comments, equations and figures. Save it as a .pdf file which should exceed neither 3 Mb nor 8 pages. No title page. No appendix. Indicate all names at the top of the first page only. Fontsize should be 11pt. Excel plots are not accepted. Organize the plots in an effective manner. Submit all nicely commented and organized Matlab/Python scripts in a .zip archive into which you will also include your pdf report. The name of the archive should be a concatenation of the family names of the team members. Submit only one archive per team on MyCourses. Unless stated otherwise, the use of advanced Matlab/Python commands is prohibited. Equally important is the prohibited use in the provided scripts of the Matlab/Python symbolic toolbox.

Grading scheme Below is the grading scheme used for the final report. It is designed on the following attributes with their respective weight:

- Comprehension of information and concepts of fundamental engineering sciences (10%)
- Critical evaluation of the validity and accuracy of solution methods (30%) and accuracy of solution methods (30%)
- Understanding of the problems and appropriate definition of the objectives (14%)
- Appropriate selection of solution techniques and resources (13%)
- niversity | male High quality written engineering report (13%) 22 McGill University
 - Engagement in self-study on topics of interest (10%)

University For each student, 10% of the grade is based on the Peer Evaluations submitted by the other team

Peer evaluation. Every student must fill out and submit the peer evaluation form by the above deadline. The liversity form can be found in the "Project" folder on MyCourses. A student failing to do so will be assigned a liversity 0/100 grade for the project. All students are asked to read the content of this form before starting the liversity project egrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | 0/2022 McGill University | 0/2022 McGill Uni

Plagiarism and Cheating at McGill It is never too late to read (again) McGill's code on students' rights and responsibilities: https://www.mcgill.ca/students/srr/academicrights/integrity/cheating

1 Errors and stability in numerical methods [15pts]

Write an essay of 700 words on the notions of errors and stability in Numerical Methods. Plain text only is allowed. Lists and mathematical characters/symbols are prohibited. Cover all possible topics related to forward error, backward error, conditioning, and stability. Explain the associated issues and the possible solution strategies. Indicate the number of words.

2 Inverted flags [85 pts

Conventional flags are thin rectangular *plates* flapping due to the action of a surrounding air flow, also called *wind*, circulating from the fixed end to the free end (think of a flag attached to a post: the clamped end is the part of the flag attached to the post while the free end is the other one). Inverted flags are similar systems where the air flow circulates from the free end to the fixed end instead (see a video on this system). The present and highly simplified formulation is focused on the time-independent static solution of an inverted flag subject to a transverse force $F_N(x)$ induced by the action of the wind on the plate. First, the plate, which is commonly a two-dimensional system, is reduced to a simpler and somehow equivalent one-dimensional system called a *beam* of length L. In the present exercise, the main quantity of interest is the angle of rotation, denoted $\psi(x)$, of a straight cross-section, as assumed in the Euler-Bernoulli beam theory. Once the angle

$$w(x) = y$$
 and $\sin \psi(s) ds$. Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | Mathias.legrand@mcgill.ca | Document cannot be shared | ©2022 McGill University | Mathias.legrand@mcgill.ca | Document can

Investigate on *plates* and *beams* from the

The equation governing $\psi(x)$ is

mathias.legrand@ncgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared |
$$D\psi''(x)$$
 = $[0, L]$ inversity | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias.legrand@mcgill.ca | @2022 McGill University | @2022 McGill University | @2022 McGill Univers

where D is the transverse stiffness of the beam. Unless stated otherwise, we assume that L $F_N(x) = 100$. This governing equation comes with the two boundary conditions

iversity |
$$\psi(0)$$
a \Rightarrow e 0 an $\operatorname{and}_{\operatorname{lcg}}\psi'(L)$) \Rightarrow ent cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | Docur (3)

Versity | mathias legrand@mcgill.ca | Document cannot be shared | 2022 McGill University | mathias legrand@mcgill.ca | Do Given D and $F_N(x)$, the question is thus to find a function $\psi(x)$ which satisfies Equations (2) and (3).

2. Explain why finding the expression of $\psi(x)$ is not an easy task.

In the remainder, the following family of functions, called shape functions, will be

$$\phi_i(x) = \sin(r_i x) + \sinh(r_i x) + \frac{\cos(r_i) + \cosh(r_i)}{\sin(r_i) + \sinh(r_i)} [\cos(r_i x) - \cosh(r_i x)], \quad i = 1, 2, \dots$$

where r_i is the *i*th root of the transcendental equation $\cos(x)\cosh(x) + 1 = 0$.

Ver 3. Find approximations of r_1 and r_2 with three digits of accuracy. Plot $\phi_1(x)$ and $\phi_2(x)$

As a first approach, we assume that the exact $\psi(x)$ is approximated by $\psi_h(x) = \phi_1(x)q_1$, where $\phi_1(x)$ is defined in Equation (4). The expression can be differentiated twice in space so that $\psi_h''(x) = \phi_1''(x)q_1$. As a consequence, the unknown of the problem is now q_1 . Galerkin's procedure is then applied. It reads: find

Mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document |
$$f(q_1) = D_0 + D$$

- 4. Briefly explain Galerkin's procedure to be sha
- 5. Plot the function $f(q_1)$ on an interval of interest.
- 6. Suggest a fixed-point iteration equivalent to solving Equation (5). Does it converge? Explain which sity | quadrature scheme is used.ument cannot be shared | ©2022 McGill University | mathias.legrand@mcgill.ca | D
- \sim 7. Using an algorithm of your choice, find a numerical approximation of q_1 with three digits of accuracy.
- 8. | Plot the corresponding | deflection of the beam. | ©2022 McGill University | mathias.legrand@mcgill.ca | Definition |
- 9. For this question only, F_N is still constant in space and its magnitude is varied in the interval [0, 100]. ersity | Plot the corresponding $|\psi_h(L)|$ as a function of $|F_N|$.

The accuracy of the approximation can be improved by relying on the assumption $\psi_h(x) =$ $\phi_2(x)q_2$. As a consequence, the unknowns of the problem are now q_1 and q_2 . Galerkin's procedure then

mathias legrand@mcgill ca | Document cannot be share
$$L$$
 @2022 McGill University | mathias legrand@mcgill.ca | Document $f_1(q_1,q_2) = D$ [iii] $\phi_1\psi_h(x)dx + F_N$ [band] | $\phi_1(x)\cos(\psi_h(x) + \psi_h(s))ds dx = 0$ negill.ca | Document mathias legrand@mcgill.ca | Document cannot be share f_1 | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | $f_2(q_1,q_2) = D$ [iii] $\phi_2\psi_h(x)dx + F_N$ [band] | $\phi_2(x)\cos(\psi_h(x) + \psi_h(s))ds dx = 0$ negill.ca | Document mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | mathias legrand@mcgill.ca | Document cannot be shared | @2022 McGill University | ma

2002 McGill University mothies legrand@magill ca Document cannot be shared	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
	n a relevant domain sity mathias.legrand@mcgill.ca Document cannot be shared
	lving system (6). Does it converge?d@mcgill.ca Document cannot be shared
	nerical approximation of q_1 and q_2 with three digits of cannot be shared
2022 McGill University accuracy rand@mcgill.ca Document cannot be shared	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
	and compare to the previous one. Is the contribution of cannot be shared
2022 McGill University the term $\phi_2(x)q_2$ critical in the approximation	? ©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
	ed via the expression $\psi_h(x) = \phi_1(x)q_1 + \phi_2(x)q_2 + \cdots + \phi_n(x)q_n$
2022 McGill Uni $\phi_3(x)q_3$. As a consequence, the unknowns of the pro-	oblem_are_now q_1,q_2 and q_3 as legrand@mcgill.ca Document cannot be shared
2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 14. Find a numerical approximation of q_1, q_2 and mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca mathias legra	
15. Plot the corresponding deflection of the beam	1 92022 Micom University i maunas. Tegrand & megni. ea i Document cannot de snafed i
16. Does the proposed scheme seem to converge to	owards the true solution $\psi(x)$?
2002 McGill University mathias legrand@mcgill ca Document cannot be shared	@2022 McGill University mathias legrand@mcgill ca Document cannot be shared
	a achieved by inserting the computed approximation into
	ximately satisfied) and compute the residual function in
order to take its magnitude in the sense of the 2-norm	n.
	towards the true solution $\psi(x)$ as the number of shape cannot be shared
**	is possible to find an estimate of the rate fo convergence? cannot be shared
2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
2022 McGill Uni A non-constant function $F_N(x)$ is now considered.	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 18. Briefly explain how you would solve the above	©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
2022 McGill University mathias.legrand@nicgill.ca Document cannot be shared	questions. 1 © 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
20023 M. C. H. H	1 80000 M G.IIII.; ; ; 1 41; 1 18 ; III 1D ; 1 1 1 1
2022 McGill Uni In the above questions, it is strongly advised to sin	plify by hand all quantities or expression that can be cannot be shared
20023 M. C. H. H	plify by hand all quantities or expression that can be cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 20022 McGill University mathias.legrand@mcgill.ca Document cannot be shared	inplify by hand all quantities or expression that can be cannot be shared inplemented only when the latter step is completed. ©2022 McGill University mathias legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University Mathias legrand@mcgi	inplify by hand all quantities or expression that can be cannot be shared in plemented only when the latter step is completed. 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill Univ	inplify by hand all quantities or expression that can be cannot be shared inplemented only when the latter step is completed. Output Output McGill University mathias legrand@mcgill.ca Document cannot be shared Output McGill University mathias legrand@mcgill.ca Document cannot be shared Output McGill University mathias legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill University mathas legrand@megil.ca Document cannot be shared 20022 McGill Univ	inplify by hand all quantities or expression that can be cannot be shared in plemented only when the latter step is completed. 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shar	ich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared BFGS algorithm. It follows the same steps but differs cannot be shared mplify by hand all quantities or expression that can be cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shar	ich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared BFGS algorithm. It follows the same steps but differs cannot be shared mplify by hand all quantities or expression that can be cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill ca Document cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shared 2022 McGill University mathias legrand megill cannot be shar	ich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared BFGS algorithm. It follows the same steps but differs cannot be shared mplify by hand all quantities or expression that can be cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared mich now reads: iniversity mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill University Mathias Cannot Mathias Cann	inplify by hand all quantities or expression that can be cannot be shared inplemented only when the latter step is completed. Output Output McGill University mathias legrand@mcgill.ca Document cannot be shared Output McGill University mathias legrand@mcgill.ca Document cannot be shared Output McGill University mathias legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20022 McGill University ma	inplify by hand all quantities or expression that can be implemented only when the latter step is completed. Output McGill University mathias.legrand@mcgill.ca Document cannot be shared Output McGill University mathias.legrand@mcgill.ca Document cannot be shared Output McGill University mathias.legrand@mcgill.ca Document cannot be shared Output Output Document cannot be shared Output
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in simplified by hand. Numerical methods should be in Broyden–Fletcher–Goldfarb–Shanno (BFGS) algorithm seen in class is to 2022 McGill University Mathias legrand @ mcgill.ca Document cannot be shared and the strongly mathias legrand @ mcgill.ca Document cannot be shared and the strongly mathias legrand @ mcgill.ca Document cannot be shared and the strongly mathias legrand @ mcgill.ca Document cannot be shared and and the strongly mathias legrand @ mcgill.ca Document cannot be shared and the strongly mathias legrand @ mcgill.ca Document cannot be shared a course of the shared and the shared and the shared which is a shared wh	ich now reads: Iniversity mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcg	inplify by hand all quantities or expression that can be implemented only when the latter step is completed. Occurrent cannot be shared by the completed in the latter step is completed. Occurrent cannot be shared by the completed in the latter step is completed. Occurrent cannot be shared by the completed in the latter step is completed. Occurrent cannot be shared by the completed in the latter step is completed. Occurrent cannot be shared by the complete in the latter step is completed. Occurrent cannot be shared by the latter step is completed. Occurrent cannot be sh
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcg	inplify by hand all quantities or expression that can be implemented only when the latter step is completed. "Decimented only when the latter step is completed." "McGill University mathias.legrand@mcgill.ca Document cannot be shared "Course McGill University mathias.legrand@mcgill.ca Document cannot be shared "Course McGill University mathias.legrand@mcgill.ca Document cannot be shared "McGill University mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcg	inplify by hand all quantities or expression that can be implemented only when the latter step is completed. Output McGill University mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcg	inplify by hand all quantities or expression that can be implemented only when the latter step is completed. Occurrent cannot be shared or cannot be shared only when the latter step is completed. Occurrent cannot be shared or cannot be shared o
In the above questions, it is strongly advised to sin simplified by hand. Numerical methods should be in 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill University mathias legrand@mc	inplify by hand all quantities or expression that can be inplemented only when the latter step is completed. O2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
In the above questions, it is strongly advised to sin 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill Un	inplify by hand all quantities or expression that can be inplemented only when the latter step is completed. Q2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared Q2022 McGill University Mathias.legrand@mcgill
2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 20222 McGill University mathias legrand@mcgill.ca Document cannot	inplify by hand all quantities or expression that can be applemented only when the latter step is completed. ©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared McGill University mathias.legrand@mcgill.ca Document cannot be shared ©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
McGill University mathias legrand@mcgill.ca Document cannot be shared with the control of t	inplify by hand all quantities or expression that can be inplemented only when the latter step is completed. @2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
McGill University mathias legrand@mcgill.ca Document cannot be shared with the process of the approximate Jacobian matrix, which will university mathias legrand@mcgill.ca Document cannot be shared with the process of the provided matrices	inplify by hand all quantities or expression that can be cannot be shared inplemented only when the latter step is completed. ©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared McGill University m
2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot b	inplify by hand all quantities or expression that can be cannot be shared inplemented only when the latter step is completed. @2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared
2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias legrand@mcgill.ca Document cannot b	inplify by hand all quantities or expression that can be a plemented only when the latter step is completed. Inplemented only when the latter step is completed. In 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 10,2022 McGill University mathias
2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot b	inplify2 by haild all quantities or expression that can bet cannot be shared plemented only when the latter step is completed. 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared mcgill.ca mathias.legrand@mcgill.ca Document cannot be shared mcgill.ca mcgill.c
2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be	inplify by hailed all quintities or expression that can be cannot be shared plemented only when the latter step is completed. Q2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared Q2022 McGill University mat
2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be	inplify2 by haild all quantities or expression that can bet cannot be shared plemented only when the latter step is completed. 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared mcgill.ca mathias.legrand@mcgill.ca Document cannot be shared mcgill.ca mcgill.c
20222 McGill University mathias.legrand@mcgill.ca Document cannot be shared 20222 McGill University mathias.legrand@mcg	inplify by hailed all quintities or expression that can be cannot be shared plemented only when the latter step is completed. Q2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared Q2022 McGill University mat
2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot b	inplify by hailed all quiantities as or expression that can be trannot be shared plemented only when the latter step is completed. In plemented only behave
2022 McGill Uni In the above questions, it is strongly advised to sin 52022 McGill Uni simplified by hand. Numerical methods should be in 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cann	aplify by haind all quantities of expression that can be cannot be shared aplemented only when the latter step is completed. ©2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 0.0022 McG
2022 McGill Uni In the above questions, it is strongly advised to sin 52022 McGill Uni simplified by hand. Numerical methods should be in 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cannot be shared 52022 McGill University mathias legrand@mcgill.ca Document cann	aplify by hand all quantities of expression that can be cannot be shared applemented only when the latter step is completed cument cannot be shared a complete cument cannot be compl
2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared 2022 McGill University mathias.legrand@mcgill.ca Document cannot b	aplify by haind all quantities of expression that can be cannot be shared aplemented only when the latter step is completed. Q2022 McGill University mathias.legrand@mcgill.ca Document cannot be shared Q2022 McGill University mathia