Math 2306/54

Instructions Regarding the Final Exam

Thursday 16'th, July (5.00pm-7.00pm)

1. A copy of the Final Exam will be made available to you at 5.00pm on 7/16/2020 in the form of a pdf that will be uploaded to the folder titled "Materials Related to Class Tests" in D2L.
2. You can either print out a copy of the pdf and write your solutions directly on the pages that you have printed, or, you can just write your solutions on blank paper.
3. Include your name on the assignment. Organize your work neatly and make sure that everything is legible. I will not award credit for work that is unreadable. Refrain from writing faintly in pencil as a scanned copy of such work might be difficult for me to read. If you typically write faintly in pencil then please consider using ink.
4. By 7.15pm on 7/16/2020 you need to submit a scanned copy of your work into a dropbox that will be set up in D2L. You will be able to link to the dropbox from the course home page by clicking on the relevant due assignment. It would be appreciated if you could upload all off your work in the form of a single document. Please refrain from submitting materials that are difficult for me to read – no extra dark copies!
5. The work that you submit must be yours, and yours alone. You must not work with any other individuals while taking the test.
6. You are permitted use of (i) the course textbook "Fundamentals of Differential Equations" 8'th edition, by Nagle, Saff, and Snider, (ii) the class notes, and (iii) a basic graphing calculator. You are not permitted to have access to any other types of course materials or resources while taking the test.
7. If you work with other individuals or use formulae/techniques/results/notation outside of what is presented in Nagle, Saff, and Snider then you will be penalized.
8. You can expect (i) one problem on electric circuits (Section 5.7), (ii) one problem involving the use of differential operators and the elimination method to solve a system of differential equations (Section 5.2), (iii) one problem involving the calculation of the Laplace Transform (Sections 7.2, 7.3, 7.6), (iv) one problem involving the calculation of the Inverse Laplace Transform (Sections 7.4, 7.6), and (v) one problem involving the use of the Laplace Transform to solve an initial value problem (Section 7.5).
9. Credit is awarded for demonstrating knowledge of proper solution technique, not merely for writing down correct answers. To receive full credit you must show all solution details.
10. Late submissions will be subject to a penalty.
11. If possible, please include a copy of this cover sheet with the work that you submit.

TABLE OF LAPLACE TRANSFORM FORMULAS

	$f(t)$	$\bar{f}(s) = F(s) = \mathcal{L}[f(t); t \to s] = \int_0^\infty e^{-st} f(t)\,dt$
1.	1	$\frac{1}{s}$
2.	e^{at}	$\frac{1}{s-a}$
3.	$\sin kt$	$\frac{k}{s^2+k^2}$
4.	$\cos kt$	$\frac{s}{s^2+k^2}$
5.	$t^n \ (n = 1, 2, 3, \ldots)$	$\frac{n!}{s^{n+1}}$
6.	$e^{at} f(t)$	$F(s-a)$
7.	$t^n e^{at} \ (n = 1, 2, 3, \ldots)$	$\frac{n!}{(s-a)^{n+1}}$
8.	$e^{at} \sin kt$	$\frac{k}{(s-a)^2+k^2}$
9.	$e^{at} \cos kt$	$\frac{s-a}{(s-a)^2+k^2}$
10.	$U_a(t) = U(t-a)$	$\frac{e^{-as}}{s}$
11.	$U_a(t) f(t-a) = U(t-a) f(t-a)$	$e^{-as} F(s)$
12.	$t^n f(t)$	$(-1)^n \frac{d^n}{ds^n}[F(s)]$
13.	$t \sin kt$	$\frac{2ks}{(s^2+k^2)^2}$
14.	$t \cos kt$	$\frac{s^2-k^2}{(s^2+k^2)^2}$
15.	y'	$s\bar{y} - y(0)$
16.	y''	$s^2\bar{y} - sy(0) - y'(0)$