<div align="center">

MTH 2350: **Differential Equations with Matrix Algebra**

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[+] *Notate all row ops, and use only elementary row ops*

Week	Section	Topic	Problems
1	1.2	Solutions and direction fields	2, 10, 14, 35, 60, 64
1	1.3	Separation of variables	7, 16, 19, 24, 32, 57
1	1.4	Numerical approximation methods	1, 6, 8, 12, 18 [For #18, include the second order Runge-Kutta but omit the fourth order Runge-Kutta.]
2	2.1	Linear differential equations	4, 14, 22, 28, 33, 45, 46
2	2.2	First order linear differential equations (includes substitution for Bernoulli equations)	2, 12, 14, 18, 19, 20, 26, 36, 39
3	2.4	Linear models: Mixing and cooling	5, 6, 8, 10, 16, 20, 21
3	2.5	Logistic differential equation	2, 14, 16, 18, 20, 27
3	3.1	Matrices: Sums and products	8, 24, 42, 46, 61, 62, 70, 74
4	3.2	Systems of linear equations	14, 22^+, 28^+, 33^+, 46^+, 54^+, 63^+, 68, 78 [For #78, write the system in the form A**x**=**0**.]
4	3.3	Matrix inverse	6^+, 10^+, 11^+, 23^+, 26, 28, 39, 44, 46
4, 5	3.4	Determinants and Cramer's Rule (includes least squares solutions)	4, 18^+, 20, 29, 31, 36, 40, 42, 46, 47, 50
5	3.5	Vector spaces and subspaces (omit space M_)	16, 20, 34, 40 [Be careful with #40.], 42, 49, 62, 66
5	3.6	Span and basis	2, 9, 14, 24, 44, 52, 58, 64, 71, 82
6	4.1	Second order linear differential equations	3 [Write final conclusion in "alternate form" (6) on p. 200.], 18, 26, 29, 33, 43, 45, 47, 57, 61[Change "as in (18)" to "as in (12) on p. 202."]
6	4.2	Real roots of the characteristic equation (Chapter 4 includes Cauchy-Euler equations)	8, 15, 16, 20, 26, 34, 56, 58, 63, 67
6,7	4.3	Complex roots of the characteristic equation	11, 14, 16 [Express solutions of #11,14,16 in "alternate polar form, as in Example 4.3.4], 28, 44, 47, 52, 53, 63, 65
7	4.4	Undetermined coefficients	10, 14, 27, 38, 42, 47, 48, 49
7	4.5	Variation of parameters	3, 4, 8, 11, 12, 14, 15
8	4.6	Forced oscillations	4, 5, 8, 9, 10, 11, 13, 23, 32, 33, 34
8	5.3	Eigenvalues and eigenvectors	2^+, 9^+, 26^+, 27^+, 35, 37, 40, 48, 72
9	5.4	Diagonalization (Omit "Change of basis" on pp. 327-332)	28, 32, 39, 42, 49abd, 55, 58
9	2.6	Systems of differential equations	2, 4, 12, 13, 17
10	6.1	Systems of linear differential equations	4, 6, 7, 11, 18, 22
10	6.2	Linear systems with real eigenvalues	12, 16, 31, 32, 34, 43, 51, 56
11	6.5	Decoupling	1, 2, 8, 14
11	8.1	Laplace transform and its inverse	4, 10, 18, 33, 34, 46, 47, 48, 52
11,12	8.2	Solving ODEs by Laplace transform	4, 6, 8 [For #8, change cos 3t to cos 2t.], 12, 14, 15
12	8.3	Step function and delta "function"	2, 6, 12, 13, 21, 33, 35, 46, 51
13	8.4	Convolution integrals and transfer functions	10 [For #10, consider separately the cases a=0 vs. a≠0.], 14, 16, 17, 24, 27, 35, 39