Math 307 Week 2 Newsletter – Dr. Loveless

UPCOMING SCHEDULE:

Friday: Section 2.1 (integrating factors, linear 1st order ODE's)
Monday: Section 2.3 (Applications using both solving methods)
Wednesday: Section 2.6 (Population Dynamics, equilibrium analysis)
Next Friday: **Test Prep 2!** and Section 2.7 (Euler's Method for approximation)

Note: We will have a short test Prep next Friday, April 15th. I will ask you to solving with both methods (separable and integrating factors).
Here is my test prep from last year (see note below if you are using this for studying):
http://www.math.washington.edu/~aloveles/Math307Fall2019/Test%20Prep%202.pdf
and here are solutions:
http://www.math.washington.edu/~aloveles/Math307Fall2019/Test%20Prep%202%20Solutions.pdf
NOTE about this old test prep: We do NOT do exact equations any more so you can ignore that part (or read it if you are curious about another method). I will not ask about EXACT equations. On the extra problem page, problems 2 and 3 talk about theory, we also do NOT do that anymore but you can read that if you are curious about some theory (and if you want to see some interesting things that can happen with initial conditions).

Also remember Midterm 1 is Wednesday, , covers 1.1-1.3, 2.1-2.3,2.5,2.7

HOMEWORK: Closing Friday: HW2 (2.2) Closing Wednesday: HW 3 (2.1)

NEW POSTING:
Here, again, is the course website: http://www.math.washington.edu/~aloveles/Math307Fall2019/index.html
These are all original review sheets written by me. I have just written some of these so beware of typos (but I have gone through a couple edits so hopefully I caught most the typing errors).

1. Detailed 2.1 (Integrating Factors) Review with examples:
   http://www.math.washington.edu/~aloveles/Math307Fall2019/m307Review2-1.pdf
2. Detailed 2.3 (Applications) Review:
   http://www.math.washington.edu/~aloveles/Math307Fall2019/m307Review2-3.pdf
3. Detailed 2.5 (Equilibrium) Review (read the examples!):
   http://www.math.washington.edu/~aloveles/Math307Fall2019/m307Review2-5.pdf
4. Brief summary of all our first order solving methods:
   http://www.math.washington.edu/~aloveles/Math307Fall2019/m307ReviewFirstOrderSolving-f19.pdf

Please check out and read these review sheets above. I intend them to be part of your reading. You should read the book, come to lecture, then read the posted review and examples. Doing these three things should make the material and concepts much more clear in your head (and it will make the homework and exams much easier).

Supplemental Reading – Not Required, just for your own interest, you will not be tested on this
Here is an overview of some theory about initial conditions (not required) if you are curious
http://www.math.washington.edu/~aloveles/Math307Fall2019/m307Review2-4.pdf
An here is a discuss of exact equations (another solving method which we will not discuss if you are curious)
http://www.math.washington.edu/~aloveles/Math307Fall2019/m307Review2-6.pdf

See next page for old exam review…

OLD EXAMS:
Here, again, is my personal Math 307 exam archive:
http://www.math.washington.edu/~aloveles/Math307Fall2019/examarchive.html
And here is the Math 307 Exam 1 Archive: https://sites.math.washington.edu/~m307/midterm1.php
Here is some targeted practice on the current material:

Practice for 2.1 (Integrating Factors):
Problem 1(b): http://www.math.washington.edu/~aloveles/Math307Spring2016/sp15m307e1.pdf
Problem 2(b):
http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm_1_wi14_spicer.pdf
Problem 1: https://sites.math.washington.edu/~m307/midterm1/m2018/midone05.pdf
Problem 2: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1h.pdf
Problem 2: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1f.pdf

Practice for chapter (Set-Up Applications):
Populations/Savings Accounts:
Problems 1(a) and 5: https://sites.math.washington.edu/~m307/midterm1/m2018/midone05.pdf
Problem 5: https://sites.math.washington.edu/~m307/midterm1/m2015/midone1.pdf
Problem 5 from: http://www.math.washington.edu/~aloveles/Math307Spring2016/sp15m307e1.pdf
Problem 5 from: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1.pdf
Mixing Problems:
Problem 5: https://sites.math.washington.edu/~m307/midterm1/m2018/midone05.pdf
Problem 3b: https://sites.math.washington.edu/~m307/midterm1/m2015/midone1.pdf
Problem 3b from: http://www.math.washington.edu/~aloveles/Math307Spring2016/sp15m307e1.pdf
Problem 3 from: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1f.pdf
Problem 3a from: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1h.pdf
Velocity:
Problem 4 from: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1g.pdf
Problem 5 from: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1f.pdf
Problem 4 from: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1e.pdf
Newton's Law of cooling:
Problem 5: https://sites.math.washington.edu/~m307/midterm1/m2018/midone02.pdf
Other:
Problem 4 from: http://www.math.washington.edu/~aloveles/Math307Spring2016/sp15m307e1.pdf
Problem 5 from: http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1g.pdf

Practice with change of variable:
Last page of: http://www.math.washington.edu/~aloveles/Math307Fall2019/m307Review2-2.pdf
(Full description of method and two examples are given on last page of the review above)
See the note 2: http://www.math.washington.edu/~aloveles/Math307Spring2016/m307Review2-1.pdf
(Two more examples in note mentioned above)
Last example on: http://www.math.washington.edu/~aloveles/Math307Spring2016/m307Review2-1.pdf
Problem 1(c): http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1h.pdf
Problem 2(a): http://www.math.washington.edu/~aloveles/Math307Spring2016/midterm1e.pdf
(On problem 2(a) above, assume you are told to use the substitution $y = u\,x$, so you get $dy/dx = u + x\,du/dx$, by using the product rule. Now substitute)

I hope this helps!

Dr. Andy Loveless