Math 3550 HOMEWORK #4 Name:

Due 10/02/2023, 11:30 a.m.

Solve the following problems and staple your solutions to this cover sheet. (Computer outputs must be put in the appropriate place in the solution, not attached as an appendix. You may physically cut and paste the output in the problem or allow appropriate space in the printout to add your hand written work.)

1. Sec 11.1, Prob 1.

   Note: For part (a), solve the equation $P(t) = \frac{M}{2}$. Hint: See class notes.

2. Sec 11.1, Prob 3.

3. Sec 11.1, Prob 6.

   Note: You can reuse the solution of the population model in the text with X, k and N in place of P, r, and M, respectively. Don't forget parts e-g!

4. Sec 11.2, Prob 1.

5. Sec 11.2, Prob 2.

6. Sec 11.2, Prob 5.

7. Sec 11.2, Prob 8 (a, b).

   Hint: Solve the general problem $\frac{dC}{dt} = -k\, e^C$, $C(t_0) = C_0$ and use it to solve the problem for the initial conditions $C(0) = Q$, $C(T) = R_1 + Q$, $C(2T) = R_2 + Q$, etc.

8. Sec 11.2, Prob 8 (c, d).

   Hint: Find R_n by discovering the pattern in R_1, R_2 and R_3.

9. Free points!

10. Free points!