Drexel University  
Office of the Dean of the College of Engineering  
**ENGR 232 – Dynamic Engineering Systems**

**Section : 61 Name: Cole Bardin** *first last*

**Lab 7 Answer Template: Laplace Workshop: Summer 2022**

**Part A: Definition of the Laplace Transform.**

Grading: TA will randomly pick one part from each of questions 1 – 5 and award 1 point if correct.

**Question 1:**

**a.**  **b.**  **c.**

Record answers in the boxes above.

**Question 2:** Find each of the following Laplace transforms.

**2a.**  **2b.**  **2c.**

Record answers in the boxes above. Also, include any assumptions you needed to present the answer in the "clean" form seen in the Tables.

**Question 3:** Find these transforms using laplace().

**3a.**  **3b.**  **3c.**

Record answers in the boxes above.

**Question 4:** Find the **inverse** Laplace transform for each of the following functions defined in the *s*-domain.

**4a.** **4b.** **4c.**

Record answers in the boxes above.

**Part B: Partial fraction expansions.**

**Question 5:** Find the partial fraction expansion for each of the following functions in the *s*-domain. Use partfrac().

**5a.**  **5b.** **5c.**

Grading: TA will randomly pick one part from each of questions 1 – 5 above and award 1 point if correct.

**Part C: Solving a Differential Equation using the Laplace Transform.**

**Question 6:**  and initial conditions:

**Question 6:** Record the exact solution for found using dsolve:

**Question 7:** Record **both** the solution in partial fraction form and the solution in the time-domain that were just found using the Laplace technique here. Did you get the same answer for ?

**Question 7:**

(must be in partial fraction form)

Yes, same answer!

**Part D: Solve a new DE using the Laplace transform technique. (3 points)**

The last three points will be earned by using code similar to that given above to solve the new differential equation:

**Points 8-10:** Solve this new DE using the Laplace technique and past these three answers below.

**Questions 8-10:**

**8:**  Must be a quadratic over a cubic for points.

**9:**

**10:**

**Ready to Submit?**

Be sure all ten questions are answered. When your lab is complete, be sure to submit three files:

1. Your **completed Answer Template** as a PDF file
2. A copy of your **MATLAB Live Script**
3. A **PDF** copy of your **MATLAB Live Script** (Save-Export to PDF…)

The due date is the day after your lab section by **11:59pm** to receive full credit. You have one more day, to submit the lab (but with a small penalty), and then the window closes for good and your grade will be zero.