

# Differential Equations – Homework Day 1

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Professor:

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**This Homework Only:** You can submit these practice problems at any time during the semester. Submit HW1 here All other practice problems should be submitted before the class that they are due.

What should I do between this class and Day 2?

- Work on as much algebra and integration review as you think you might need. You can visit my calculus website for more videos on integration: <https://joannabieri.com/calculusII.html#hw>.
- Watch the videos for Fridays class “Integration as a Solution”
- Try all the problems from HW2
- Submit your HW2 problems by the beginning of class. Take a photo/scan of your hand written work and submit it on canvas Submit HW2 here
- Come to class with questions.

**Directions:** Do each of these integrals by hand without looking them up on a table or using a computer/calculator. Really take this opportunity to relearn integration and algebra.

1.  $\int (2t + 7)^{72} dt$

2.  $\int y (\ln(y)) dy$

3.  $\int \frac{x + 1}{x^2 + 6x} dx$

4.  $\int \frac{1}{x^2 + 4x + 4} dx$

5.  $\int \frac{x}{(1 + x^2)^2} dx$

6.  $\int se^{s^2} ds$

7.  $\int \frac{r^3 + r^2 + 1}{r} dr$

8.  $\int t \sin(t^2) dt$

9.  $\int x \sin(x) dx$

10.  $\int (t + 2)\sqrt{2 + 3t} dt$

11.  $\int \frac{x^3 + 7x^2 + 10x + 1}{x^2 + 7x + 10} dx$

12.  $\int e^y \cos(y) dy$

13.  $\int \frac{p^2 + 2}{p^2 + p} dp$

14.  $\int \frac{x^3 \sin(x)}{x \sin(x)} dx$

15.  $\int \cos^4(t) dt$

16.  $\int s^2 (1 + 2s^3)^2 ds$

17.  $\int \sin^3(x) dx$

18.  $\int \sin(x) \sec(x) dx$

19.  $\int \sec^2(y) dy$

20.  $\int x^2 e^x dx$

**Other Notes:**

1. It's okay if these are really hard for you! Please don't give up. Keep trying and come get help.
2. Do some algebra and calculus review EVERY DAY - seriously make it a habit! You will thank yourself later.