Math 121, Sections 01, 02, 03, Fall 2021

**Homework #8**

Due **Wednesday, September 29th** in Gradescope by 11:59 pm ET

**Goal:** Exploring Integrals using Secant Trig Subsitutions, Complete the Square and also Partial Fractions Decomposition

Compute each of the following Integrals. Simplify when possible.

1. $\displaystyle\int \frac{\sqrt{x^2-9}}{x^3}\,dx$

2. $\displaystyle\int \frac{1}{x^2\sqrt{x^2-16}}\,dx$

3. $\displaystyle\int \frac{1}{\sqrt{4-4x-x^2}}\,dx$

4. $\displaystyle\int_{-1}^{1} \frac{1}{x^2+4x+7}\,dx$

5. $\displaystyle\int \sqrt{3-2x-x^2}\,dx$

6. $\displaystyle\int \frac{x+4}{x^2+2x+5}\,dx$

7. $\displaystyle\int_{0}^{1} \frac{x-4}{x^2-5x+6}\,dx$

8. $\displaystyle\int \frac{\arctan x}{x^2}\,dx$

9. $\displaystyle\int_{\ln 2}^{\ln 5} \frac{2e^x}{e^{2x}-1}\,dx$

10. $\displaystyle\int \frac{x^4+9x^2+x+2}{x^2+9}\,dx$

11. $\displaystyle\int \frac{10}{(x-1)(x^2+9)}\,dx$

12. $\displaystyle\int \frac{x^4-6x^3-34x-3}{(x-7)(x^2+2)}\,dx = \int \frac{x^4-6x^3-34x-3}{x^3-7x^2+2x-14}\,dx$

# REGULAR OFFICE HOURS

## Monday: 1:00–3:00 pm

**9–10:30 pm TA Mia, SMUDD 207**

## Tuesday: 12:00–4:00 pm

**6–7:30 pm TA Ian, SMUDD 207**

**7:30–9:00 pm TA Karime, SMUDD 207**

## Wednesday: 1:00-3:00 pm

**6–7:30 pm TA Ian, SMUDD 207**

**7:30–9:00 pm TA Daksha, SMUDD 207**

## Thursday: none for Professor

**1–2:30 pm TA Mia, SMUDD 207**

**7:30–9:00 pm TA Daksha, SMUDD 207**

## Friday: 12:00–2:00 pm

**2:30–4:00 pm TA Karime, SMUDD 014****

Please e-mail with questions/concerns: `dbenedetto@amherst.edu`

Either *Start early* or *don't start late.*

Thanks for working hard. I appreciate it!