

## Homework #11

Due **Friday, March 8th** in Gradescope by 11:59 pm ET

**Goal:** Computing Areas using the Limit Definition of the Definite Integral **and** using the Quicker method, The Fundamental Theorem of Calculus.

1. Evaluate  $\int_{-2}^2 x^2 - 5x + 6 \, dx$  using the Limit Definition of the Definite Integral and Riemann Sums. Sketch the graph and shade the bounded region.

2. Show that  $\int_{-3}^3 x \, dx = \boxed{0}$  using the Limit Definition of the Definite Integral and Riemann Sums. Sketch the graph and shade the bounded region.

3. Show that  $\int_{-3}^3 x \, dx = \boxed{0}$  again using the Fundamental Theorem of Calculus.

Compute the following Definite Integrals using the Fundamental Theorem of Calculus.

4.  $\int_{-2}^5 4 - 3x \, dx$

5.  $\int_{-1}^2 x^3 - 2x \, dx$

6.  $\int_1^9 \sqrt{x} \, dx$

7.  $\int_1^8 \frac{1}{x^{\frac{2}{3}}} \, dx$

8.  $\int_1^9 \frac{1}{\sqrt{x}} \, dx$

9.  $\int_{\frac{\pi}{6}}^{\pi} \sin \theta \, d\theta$

10.  $\int_{-5}^5 \pi \, dx$

11.  $\int_0^{\frac{\pi}{3}} \sec^2 x \, dx$

12.  $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \cos x \, dx$

13.  $\int_0^{\frac{\pi}{3}} \sec x \tan x \, dx$

14.  $\int_{-1}^1 x^3 \, dx$

15.  $\int_{-2}^2 x^2 - 5x + 6 \, dx$

# REGULAR OFFICE HOURS

**Monday: 12:00–3:00 pm**

**Tuesday: 1:00–4:00 pm**

7:30–9:00 pm TA Alexa, SMUDD **208A**

**Wednesday: 1:00-3:00 pm**

**Thursday: none for Professor**

6:00–7:30 pm TA Alexa, SMUDD **208A**

**Friday: 12:00–2:00 pm**

- Start early and attend Office Hours
- Enjoy Spring Vacation!