

Homework #11

Due **Friday, March 6th** 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

7:30–9:00 pm TA Uchenna, SMUDD 208A

Tuesday: 1:00–4:00 pm

Wednesday: 1:00-3:00 pm

Thursday: none for Professor

4:00–5:30 pm TA Uchenna, SMUDD 208A

Friday: 12:00–2:00 pm

- Start early and attend Office Hours
- Make sure to label everything carefully, connecting solution with Equal Signs