

Homework #11

Due **Friday, March 10th** 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 Ellerman, SMUDD **204**

Wednesday: 1:00-3:00 pm

Thursday: none for Professor

7:30–9:00 pm TA Ellerman, SMUDD **207**

Friday: 12:00–2:00 pm

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