

Homework #11Due **Friday, March 7th** 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.

$$4. \int_{-2}^5 4 - 3x \, dx \qquad 5. \int_{-1}^2 x^3 - 2x \, dx \qquad 6. \int_1^9 \sqrt{x} \, dx$$

$$7. \int_1^8 \frac{1}{x^{\frac{2}{3}}} \, dx \qquad 8. \int_1^9 \frac{1}{\sqrt{x}} \, dx \qquad 9. \int_{\frac{\pi}{6}}^{\pi} \sin \theta \, d\theta$$

$$10. \int_{-5}^5 \pi \, dx \qquad 11. \int_0^{\frac{\pi}{3}} \sec^2 x \, dx \qquad 12. \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \cos x \, dx$$

$$13. \int_0^{\frac{\pi}{3}} \sec x \tan x \, dx \qquad 14. \int_{-1}^1 x^3 \, dx \qquad 15. \int_{-2}^2 x^2 - 5x + 6 \, dx$$

REGULAR OFFICE HOURS

Monday: 12:00–3:00 pm

7:30–9:00 pm TA Andrew, SMUDD **207**

Tuesday: 1:00–4:00 pm

Wednesday: 1:00–3:00 pm

Thursday: none for Professor

8:00–9:30 pm TA Andrew, 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