Worksheet 14
Volume Problems
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Let $U = \mathbb{R} \times \mathbb{R}$

Exercise 14.1. Evaluate $\int_0^1 \big(4x^2 + 12x - 14\big)dx$.

Exercise 14.2. Evaluate $\int_{-3}^1 \big(5x^2 + 10x - 15\big)dx$.

Exercise 14.3. Evaluate $\int_{-3}^1 \big(2\pi \cdot (x+3) \cdot \big(5x^2 + 10x - 15\big)\big)dx$.

Exercise 14.4. Evaluate $\int_{-3}^1 \big(\pi \cdot \big(15x^4 + 100x^3 - 20x^2 - 440x + 345\big)\big)dx$.

Let M be the region defined by the area of the region bounded by $y = -2x + 1; \quad \wedge \quad y = -x^2 + 2x + 1$.

Exercise 14.5. Find the area of the M

Exercise 14.6. Find the volume of the region created by spinning M about the line $y = 4$

Exercise 14.7. Find the volume of the region created by spinning M about the line $x = -2$

Exercise 14.8. Find the volume of the region created by spinning M about the line $x = 5$

Exercise 14.9. Find the volume of the region created by spinning M about the line $y = -10$

Let R be the region defined by the area of the region bounded by $y = 4x^2 + 12x - 14; \quad \wedge \quad y = -x^2 + 2x + 1$.

Exercise 14.10. Find the area of the R

Exercise 14.11. Find the volume of the region created by spinning R about the line $y = 5$

Exercise 14.12. Find the volume of the region created by spinning R about the line $x = 2$

Exercise 14.13. Find the volume of the region created by spinning R about the line $x = -4$