Worksheet 13

More Definite Integrals & Area Problems

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Let $U = \mathbb{R} \times \mathbb{R}$

Exercise 13.1. Evaluate $\int_{-3}^{-2} \big(x^3 + 3x^2 - 4x - 12\big)dx$.

Exercise 13.2. Evaluate $\int_{-3}^{2} \big(x^3 + 3x^2 - 4x - 12\big)dx$.

Exercise 13.3. Evaluate $\int_{-2}^{2} \big(x^3 + 3x^2 - 4x - 12\big)dx$.

Exercise 13.4. Evaluate $\int_{0}^{-1} \big(x^3 + 3x^2 - 4x - 12\big)dx$.

Exercise 13.5. Find the area of the region bounded by $y = 2x^3 - 4x^2 + 3x - 1; \quad \wedge \quad y = x^3 - 7x^2 + 7x + 11$.

Exercise 13.6. Find the area of the region bounded by $y = 4x^2 + 3x - 1; \quad \wedge \quad y = 7x + 11$.

Exercise 13.7. Find the area of the region bounded by $x = y^2; x = -y^2 - 3; y = -1; \quad \wedge \quad y = 2$.

Exercise 13.8. Find the area of the region bounded by $x = y^2 - 1; \quad \wedge \quad x = 4y + 4$.

Exercise 13.9. Find the area of the region bounded by $y = \cosh x; y = \cosh x - 1, x = 0; \quad \wedge \quad x = \ln 4$.

Exercise 13.10. Find the area of the region bounded by $y = \cosh x; y = 0, x = 0; \quad \wedge \quad x = \ln 4$.

Exercise 13.11. Find the area of the region bounded by $y = \cosh x; y = \cosh x - 1, x = 0; \quad \wedge \quad x = 2$.