Assignment 5

Due on 2021-06-24, 23:59 IST.

1. The area of the region bounded by the curve \( y = x^3 + x - 1, x = 0, x = 2 \) is

\[ \text{Area} = \int_0^2 (x^3 + x - 1) \, dx \]

\[ = \left[ \frac{x^4}{4} + \frac{x^2}{2} - x \right]_0^2 \]

\[ = \left( \frac{16}{4} + \frac{4}{2} - 2 \right) - (0) \]

\[ = 6 \]

2. Let \( f(x) = x^3 - 2x \) be continuous and \( \int_0^2 f(x) \, dx = a \). Then which of the following is true?

\[ \int_0^2 (f(x))^2 \, dx = \frac{a^2}{2} \text{ (option A)} \]

\[ \int_0^2 f(x) \, dx = a \text{ (option B)} \]

3. No, the answer is incorrect. Hint: Try a different approach.

4. No, the answer is incorrect. Hint: Check your integration limits.

5. No, the answer is incorrect. Hint: Double-check your calculations.

6. No, the answer is incorrect. Hint: Consider the nature of the function.

7. No, the answer is incorrect. Hint: Re-examine the integral.

8. No, the answer is incorrect. Hint: Ensure the limits of integration are correct.

9. No, the answer is incorrect. Hint: Review your integration technique.

10. No, the answer is incorrect. Hint: Consider the properties of integrals.

11. No, the answer is incorrect. Hint: Check your algebraic manipulations.

12. No, the answer is incorrect. Hint: Double-check your substitution.

13. No, the answer is incorrect. Hint: Review the application of integration techniques.

14. No, the answer is incorrect. Hint: Examine the limits of integration.

15. No, the answer is incorrect. Hint: Re-examine the integral expression.

16. No, the answer is incorrect. Hint: Consider the area under the curve.

17. No, the answer is incorrect. Hint: Double-check your calculations.

18. No, the answer is incorrect. Hint: Review your algebraic steps.

19. No, the answer is incorrect. Hint: Re-examine your approach to the problem.

20. No, the answer is incorrect. Hint: Check your understanding of the concepts involved.