

# json -> latex convert test

kora

## Questions

1. Find the derivative of the function  $f(x) = x^3 - 4x^2 + 5x - 7$ . [5]

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2. Given  $g(x) = \frac{1}{2}x^2 - 4\ln(x)$ , find the second derivative of  $g(x)$ . [5]

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3. Calculate the indefinite integral  $\int (6x^3 + 8x^2 - 5x + 1)dx$ . [5]

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4. Find the area under the curve  $y = 2x^3 - x^2 + 4x - 1$  from  $x = 0$  to  $x = 2$ . [5]

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5. Determine the critical points of  $h(x) = x^4 - 8x^2 + 10$  and classify them as local [5]

maxima, minima, or neither.

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6. Evaluate the integral  $\int_1^4 \frac{x^3+2x-5}{x^2} dx$ . [5]

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7. Given  $f(x) = e^{2x}(3x^2 + x)$ , find the derivative of  $f(x)$ . Simplify your answer. [5]

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8. Find the equation of the tangent line to the curve  $y = \sin(x) - x \cos(x)$  at  $x = 0$ . [5]

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9. Calculate the volume of a solid formed by rotating the area between  $y = x^2$ ,  $y = 4 - x^2$  about the y-axis. [5]

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10. Given a function  $f(x) = \sqrt{x} + \frac{4}{x^3}$ , find its derivative and evaluate it at  $x = 1$ . [5]

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