

1. Find the exact area under the graph of $f(x) = 5x^2 + 2$ between $x = 0$ and $x = 1$.

2. Find the exact area under the graph of $f(x) = 3x^2 + 1$ between $x = 0$ and $x = 1$.

3. Find the exact area under the graph of $f(x) = 2x + 1$ between $x = 0$ and $x = 3$.

4. Find $\frac{d}{dx} \int_2^x 3t - 2 dt$.

5. Find $\frac{d}{dx} \int_{x^2}^4 3 \sec^2(u) du$.

6. Find $\frac{d}{dx} \int_{e^{5x} + \tan(3x)}^6 \ln(w) dw$.