

Section 6.2: Substitution

Section Objectives:

- Use substitution to find antiderivatives.
- Identify the appropriate u for substitution.
- Know the connection between substitution and the chain rule.

Practice Problems

1. Evaluate the following antiderivatives. Check your work by taking the derivative of the function you get.

(a) $\int 4(2x + 1)^6 dx$

(b) $\int x(3 - x^2)^4 dx$

(c) $\int (2x + 1)\sqrt[4]{x^2 + x} dx$

$$(d) \int \frac{e^x}{e^x + 5} dx$$

$$(e) \int \frac{1}{x \ln(x)} dx$$

2. The Three Michael's Metal Company decided to get into the water bottle making business. Find the cost function if the marginal cost, in dollars, is given by $x^3(200+x^4)$ where x is number of cases produced and the fixed costs are \$300.

More Practice from Textbook 6.2: You should do as many problems from each set (1-34, 35-48), as needed until you are comfortable with these techniques. 35-48 are good practice for application problems.