

Fundamental Theorem of Calculus & Indefinite Integrals

Section: 5.3 & 5.4

1. Solve the following definite integral using limit notation:

$$f(x) = x^2 - x + 2 \quad \text{over } [0, 3]$$

2. Solve the above definite integral using the fundamental theorem of calculus.

3. Solve the following integrals using the fundamental theorem of calculus:

a) $\int_1^4 2 + e^x \, dx$

b) $\int_{-2}^7 x^3 - x + \frac{1}{3} \, dx$

c) $\int 3x^2 + x - 5 \, dx$

d) $\int 2 - \frac{1}{16}x + \frac{1}{5}x^2 \, dx$

e) $\int_1^5 2 + x^{-1} - 3x^{-2} \, dx$