

1. Use the fundamental theorem of calculus to evaluate the definite integrals:

a. $\int_0^8 (4x-7) dx$

b. $\int_1^2 (4x-7) dx$

c. $\int_1^T \left(\frac{x+1}{x^4} \right) dx$

d. $\int_4^x (e^t + \sqrt{t}) dt$

2. Use the fundamental theorem of calculus to find $F'(x)$ for

a. $F(x) = \int_2^x \sqrt{t^3 + 5t - 8} dt.$

b. $F(x) = \int_8^{5x^2+20} (\ln t)^3 dt$

3. Find the value of x for which $F(x) = \int_{-8}^x (|t| + 200) dt$ takes its maximum on the interval $[-8, 40]$.