

The Indefinite Integral (Applications) (Sec 13.1)

57. Marginal Cost The marginal cost of producing the x th box of light bulbs is

$$5 - \frac{x}{10,000} .$$

- a. What is the general form of the cost function?

- b. Find the increase in cost if production is increased from 100 to 200 light bulbs.

- c. If the fixed cost is \$20,000 , find the cost function $C(x)$.

63. COVID-19 Epidemic: First Wave in the U.S. The rate of new cases of COVID-19 in the U.S. early in the first wave of the epidemic in 2020 can be modeled by

$$n(t) = 32(1.28^t) \text{ new cases per day} \quad (0 \leq t \leq 40),$$

where t is time in days since February 4, 2020. * Use an indefinite integral to approximate the total number of cases from February 4 up to day t . What was this number by February 29, 2020? (Round to the nearest thousand.)

67. ▼ **Health-Care Spending** Write $H(t)$ for the amount spent in the United States on health care in year t , where t is measured in years since 2019. The rate of increase of $H(t)$ was approximately \$200 billion per year in 2019 and was projected to rise to \$320 billion per year in 2027. *

a. Find a linear model for the rate of change $H'(t)$.

b. Given that an anticipated \$3,800 billion was spent on health care in the United States in 2019, find the function $H(t)$, and use it to estimate health-care spending in 2027.