

Math 1a. §5.3 Worksheet

Evaluating Definite Integrals

Fall 2005

1. Evaluate the following integrals.

(a) $\int_0^2 6x^2 - 4x + 5 \, dx$

(b) $\int_{\pi}^{2\pi} \cos \theta \, d\theta$

(c) $\int_0^1 \frac{4}{1+x^2} \, dx$

(d) $\int_0^{\pi/4} \frac{1 + \cos^2 \theta}{\cos^2 \theta} \, d\theta$

2. What is wrong with the equation

$$\int_{-1}^3 \frac{1}{x^2} dx = -\frac{1}{x} \Big|_{-1}^3 = -\frac{4}{3}$$

3. If oil leaks from a tank at a rate of $r(t)$ gallons per minute at time t , what does

$$\int_0^{120} r(t) dt$$

represent?

4. The marginal cost of manufacturing x yards of a certain fabric is

$$C'(x) = 3 - 0.01x + 0.000006x^2$$

in dollars per yard. Find the increase in cost if the production level is raised from 2000 yards to 4000 yards.