

Math 141 - Homework 14

Name: _____

Evaluate the following definite integrals.

1. $\int_{-1}^2 (2x - x^2) dx$

2. $\int_0^{\pi} 2 \cos x - 1 dx$

3. $\int_0^2 (t - 1)(t + 2) dt$

4. $\int_0^{\pi/4} \sec \theta \tan \theta + \sec^2 \theta d\theta$

5. Find the area under the curve $y = \frac{1}{x^2}$ from $x = 1$ to $x = 10$.6. Suppose that the voltage of a battery is decreasing at a rate of $\frac{-5}{(t+1)^2}$ volts per year. How much will the voltage of the battery decrease in 3 years?

Use u -substitution to find the following integrals.

7. $\int (x - 3)^6 dx$

8. $\int \frac{2x}{\sqrt{x^2 + 1}} dx$

9. $\int \frac{1}{(4t + 1)^{1/3}} dt$

10. $\int_0^{\pi/6} 3 \cos 2x dx$

11. Find the average value of the function $f(x) = 2 \sin x$ on the interval from 0 to π .