

Integration Review: u-substitution, miscellaneous integration techniques

Math 112, Calculus II

Name: _____

For each of the following problems, evaluate the integral by hand. You are welcome to check your work in Maple, but you should solve the problem first by hand. Show all work.

1. Warm-up:

(a) $\int x^{\frac{3}{2}} dx$

(b) $\int \sin(\theta) d\theta$

2. u-substitution Review:

Section 5.4 : #23, 26, 28, 29, 32, 46, 48, 51, 52, 61, 71, 72, 74

3. Miscellaneous Integrals:

(a) $\int \frac{3 \cos(x)}{\sqrt{1 + 3 \sin(x)}} dx$

(b) $\int_2^4 \frac{2dx}{x^2 - 6x + 10}$

(c) $\int \frac{x^2}{x^2 + 1} dx$

(d) $\int \frac{1 - x}{\sqrt{1 - x^2}} dx$

(e) $\int_{\pi}^{2\pi} \sqrt{1 - \cos(2x)} dx$