

MA205 - Integral Calculus
Lesson 11: The Substitution Rule I

1. Evaluate the following indefinite integrals. Don't forget the constant!

(a) $\int 2x(x^2 + 7)^{23}dx$

(b) $\int e^t \sin(e^t)dt$

(c) $\int \cos(\theta) (2 \sin(\theta))^{10} d\theta$

(d) $\int \frac{3x^2 - 2}{(x^3 - 2x + 1)^4} dx$

(e) $\int e^{\sin(t)} \cos(t) + \sqrt{\pi} dt$

2. Use substitution to find the following definite integrals. Be careful with the endpoints!

(a) $\int_1^2 x(x^2 + 1)^2 dx$

(b) $\int_0^{\sqrt{\pi}} x \cos(x^2) dx$

(c) $\int_1^2 x\sqrt{x-1} dx$

3. Do number 57, page 421.

4. Do number 62, page 421.