

# Calculus II

## Homework

### Trigonometric integrals

1. Integrate.

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

(b)  $\int \frac{1}{4 + \cos x} dx.$

(c)  $\int \frac{1}{3 + \sin x} dx.$

(d)  $\int \frac{1}{2 + \tan x} dx.$  (Hint: this integral can be done simply with the substitution  $x = \arctan t.$ )

(e)  $\int \frac{dx}{2 \sin x - \cos x + 5}.$

2. Integrate. The answer key has not been proofread, use with caution.

(a)  $\int \sin(3x) \cos(2x) dx.$

(b)  $\int \sin x \cos(5x) dx.$

(c)  $\int \cos(3x) \sin(2x) dx.$

(d)  $\int \sin(5x) \sin(3x) dx.$

(e)  $\int \cos(x) \cos(3x) dx.$

3. Integrate.

(a)  $\int \sin^2 x \cos x dx.$

(b)  $\int \sin^2 x dx.$

(c)  $\int \cos^3 x dx.$

(d)  $\int \sin^3 x \cos^4 x dx.$

4. Integrate.

(a)  $\int \sec x dx.$

(b)  $\int \sec^3 x dx.$

(c)  $\int \tan^3 x dx.$

(d)  $\int \sec^2 x \tan^2 x dx.$