

Homework Set 4

DUE: FEB 21 - 23, 2018 (AT THE BEGINNING OF RECITATION)

1. Use a trigonometric substitution to compute the following integrals:

(a)
$$\int \frac{2 dx}{x^2 \sqrt{x^2 + 9}}$$

(b)
$$\int_0^{2\sqrt{2}} \frac{x^2 dx}{(16 - x^2)^{3/2}}$$

(c)
$$\int_1^3 \sqrt{16 - x^2} dx$$

2. Use partial fractions to compute the following integrals:

(a)
$$\int \frac{2x}{(x+3)(3x+1)} dx$$

(b)
$$\int \frac{x+3}{(x-1)^3} dx$$

(c)
$$\int_1^2 \frac{x^2 + x + 1}{x^2 + x} dx$$

(d)
$$\int_1^2 \frac{1}{x^2 + 3x} dx$$