

Homework III

1. Evaluate the following integrals:

$$(a) \int \frac{2x - 7}{x^2 - 4x + 4} dx$$

$$(b) \int \frac{\sqrt{x}}{x + 3} dx$$

$$(c) \int \frac{3x + 2}{x^2 + 4x + 3} dx$$

$$(d) \int_0^3 \frac{e^t}{e^{2t} - 1} dt$$

$$(e) \int_0^1 \frac{2x + 1}{x^2 + 4x + 13} dx$$

$$(f) \int \ln(x^2 - 5x + 6) dx$$

$$(g) \int \frac{\cos(x)}{\sin^2(x) - 4 \sin(x)} dx$$

$$(h) \int x \arctan(x) dx$$

2. Sketch the region enclosed by the given curves and find its area.

$$(a) y = e^x, y = xe^x, x = 0$$

$$(b) y = \frac{2x}{x^2 - 1}, y = \frac{3x - 2}{2x^2 - 3x + 1}, x = 2, x = 4$$

$$(c) x = y^4, y = \sqrt{x - 2}, y = 0$$

3. Section 6.2, Problem 48 of the textbook.