

# Spring 2020 Math 152

## Week 6 in Review

courtesy: David J. Manuel

(covering 7.3 and 7.4)

(Problems with a \* beside them will also be done in Python)

### 1 Section 7.3

1. Evaluate the following integrals:

(a)  $\int_{-2}^2 \sqrt{4-x^2} dx$

(b)  $\int \frac{1}{\sqrt{x^2+25}} dx$

(c)  $\int \frac{x^3}{\sqrt{4x^2-9}} dx$

(d)  $\int \frac{x^2}{\sqrt{9-x^2}} dx^*$

(e)  $\int_0^1 x^3 \sqrt{x^2+1} dx$

(f)  $\int \frac{1}{x^2-2x+5} dx$

### 2 Section 7.4

1. Evaluate the following integrals:

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

(b)  $\int \frac{x-3}{x^3-6x^2+5x} dx$

(c)  $\int \frac{(6x+7)}{x^2+4x+4} dx$

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

(e)  $\int \frac{x^4+x-24}{x^3+4x} dx^*$

2. Find the volume of the solid formed by rotating the region under the curve

$$y = \frac{2}{x^2+3x+2}, \quad x \in [0, 1]:$$

(a) about the  $x$ -axis

(b) about the  $y$ -axis