

Calculus for the life Sciences II
MAT 1332B, MAT 1332C
DGDs Week 3

Integrals and Volumes

Find the volumes of solids obtained by rotating the region bounded by the given curves about the x -axis.

1.

$$y = 4 - x^2, \quad y = 0, \quad x = 0 \quad (\text{in the first quadrant})$$

2.

$$y = \sqrt{\sin x}, \quad 0 \leq x \leq \pi, \quad y = 0.$$

3.

$$y = 1 - x^2, \quad y = 1 + x^2, \quad 0 \leq x \leq 1$$

4.

$$y = \frac{1}{x}, \quad x = 0, \quad y = 1, \quad y = 2, \quad (\text{in the first quadrant})$$

5.

$$y = e^x, \quad y = e^{-x}, \quad 0 \leq x \leq 2$$

Partial Fractions

Evaluate each integral

1. $\int \frac{2x-1}{x^2+5x+4} dx$

2. $\int \frac{1}{x^2-x-6} dx$

3. $\int \frac{x^2+1}{x^2+3x+2} dx$

4. $\int \frac{x^3+1}{x^2+3} dx$

5. $\int_3^5 \frac{x}{x-1} dx$

6. $\int_2^3 \frac{1}{1-x^2} dx$