

MATH 234: HOMEWORK 8

DUE: (TBA) VIA ILLINOIS COMPASS

1. Compute:

$$\int_0^2 (x^3 + 3x^2 + x + 1) dx$$

2. Compute:

$$\int_{-100000}^{100000} x^3 dx$$

3. Compute:

$$\int_1^4 3\sqrt{x} dx$$

4. Compute:

$$\int_2^3 (4x + 4) dx$$

5. Compute:

$$\int_1^e \frac{1}{x} dx$$

6. Find the area of the region between $3x - 1$, the y -axis and the lines $y = 2$ and $y = 5$.

7. Suppose that the profit realized by a department store t days after its opening is given by the formula $4t^3 - 2t + 1$. What was the average profit per day of the store during the first five days?

8. Suppose that a colony of fruit flies is growing exponentially with an annual growth constant 0.04. If there are currently 30000 flies present, what will be the average population over the next 6 months?

9. What is the consumers' surplus for the demand curve $p(x) = 5 - \frac{x}{20}$ at sales level $x = 60$?

10. Suppose that money is deposited steadily into a savings account at the rate of \$3000 per year. How long will it take for the balance to reach \$60000 if the account pays 4% interest compounded continuously?