

Math 170: Worksheet 2

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Problem 1. Find the following definite integral:

$$\int_{-2}^2 (x^5 - 2x^3 + x^2) dx$$

Problem 2. Let $a_n = \frac{2n+1}{n+2}$. Use your calculator to find $a_1, a_{10}, a_{100}, a_{1000}$. Can you guess what happens to a_n as n becomes large?

Problem 3. Let $a_n = \frac{n^2+1}{n^3}$. Use your calculator to find $a_1, a_{10}, a_{100}, a_{1000}$. Can you guess what happens to a_n as n becomes large?

Problem 4. (extra) Let $f(x) = x^2 - 1$ and $F(x)$ be the antiderivative of $f(x)$ as calculated in class.

- What is $F(x)$?
- What is $F'(x)$? Solve $F'(x) = 0$?
- Plot the functions $F(x)$ and $f(x)$ in <https://www.desmos.com/calculator>. What happens to $F(x)$ when $F'(x)$ is 0?