Problem 0: Identification (1P)
Write your name on each sheet of paper you are using ;-) .

Problem 1: Graphing a polynomial (9P)

Consider the function
\[ f(x) := \frac{3x^5 - 20x^3}{32}. \]

- Show that \( f(x) \) is an odd function, i.e., that its graph is symmetric with respect to the origin.
- Determine the \( x \)-intercepts of the graph of \( f \), i.e., the \( x \)-values satisfying \( f(x) = 0 \).
- Determine where \( f \) is increasing and where it is decreasing.
- Determine all local maxima and minima of \( f \).
- Where is \( f \) concave upward, where is it concave downward?
- Determine the points of inflection of \( f \).
- Determine \( \lim_{x \to \infty} f(x) \) and \( \lim_{x \to -\infty} f(x) \)
- Sketch the graph of \( f \).
Problem 2: Graphing a rational function (10P)

Consider the function

\[ g(x) := \frac{x^2 - 2x + 4}{x - 2}. \]

- Determine the domain of \( g \).
- Determine all horizontal, vertical and slant asymptotes of \( g \).
- Find all local extrema of \( g \).
- Find all inflection points of \( g \).
- Sketch the graph of \( g \).

Good luck & have fun!!!