Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Consider the function $f(x) = 5x^4 - x^5$. Create the sign table for the first and the second derivative and **show clearly** on your last line the intervals of monotonicity, the intervals of concavity, the relative extrema and the inflection points of f.

2. Consider the function $f(x) = \dfrac{x}{4} + \dfrac{1}{x}$. Find its critical points and then use the second derivative test to determine whether the function has a relative maximum or a relative minimum at each of the critical points.