

GROUP WORK I, SECTION 4.1

Maxima and Minima

1. Find all local and absolute extrema for the function $f(x) = \frac{x-2}{x^2+1}$ on the interval $[-1, 2]$.

2. One model for the food-price index (the price of a representative “basket” of foods) between 1984 and 1994 is the function

$$I(t) = 0.00009045t^5 + 0.001438t^4 - 0.06561t^3 + 0.4598t^2 - 0.6270t + 99.33$$

For this model, t is measured in years since midyear 1984 (so $0 \leq t \leq 10$) and $I(t)$ is measured in 1987 dollars (hence scaled so that $I(3) = 100$). Estimate the times when food was cheapest during the period 1984–1994. Then estimate the times when food was most expensive.