

1. Consider $f(x) = x^4 - 4x^3 + 15$. Create the combined sign table for the first and second derivatives and explicitly mention the relative min/max points and the inflection points. (You are not required to sketch the graph.)

2. Consider $f(x) = \frac{1}{x^2 - 1}$.

- (a) Find the domain:
- (b) Find the vertical asymptotes if any:
- (c) Find the horizontal asymptotes if any:
- (d) Create a sign table involving the first derivative (**not** the second) (explicitly showing monotonicity and relative extrema):
- (e) Sketch the graph of the function using the asymptotes and the information gathered above.