1. Suppose \( f(x) = \frac{x^2}{x-3} \). Use the linearization at the point \( x = 4 \) to estimate \( f(4.1) \).

2. Find the slope of the tangent at the point \( P = (1,1) \) on the graph of \( e^{x-y} = 2x^2 - y^2 \).

3. Find all the critical points of the function \( g(x) = \frac{1}{x-1} - \frac{1}{x} \).

4. Find the maximum and the minimum of the function \( f(x) = 2\sqrt{x^2+1} - x \) on the interval \([0, 2]\).