1. Find the absolute maximum and absolute minimum values of \( f(x) = x^3 - 3x + 1 \) on \([0, 3]\).

2. Suppose that \( 3 \leq f'(x) \leq 5 \) for all values of \( x \). Show that \( 18 \leq f(8) - f(2) \leq 30 \).

3. Find \( \lim_{x \to 0^+} (1 + \sin 4x)^\cot x \).
4. Let \( f(x) = x^4 - 6x^2 \)

(a) Find the intervals of increasing and decreasing
(b) Find the local maximum and minimum values
(c) Find the intervals of concavity and the inflection points
(d) Sketch \( f(x) \)