1. Determine the intervals where \( f(x) \) is increasing and decreasing and the local extrema.
\[ f(x) = x^3 - 12x^2 + 36x \]

\( f(x) \) is continuous. Use the given information to sketch the graph.

\[ f(-2) = -3; f(-1) = 0; f(0) = 2; f(2) = -1; f(3) = 0 \]

2. \( f''(x) > 0 : (-\infty, -1) \cup (-1, 0) \cup (2, \infty) \)
\( f'(x) < 0 : (0, 2) \)

3. Find the 2\(^{nd}\) derivative.
\[ f(x) = x + \frac{25}{x} \]
4. Find the intervals where \( f(x) \) is concave up and concave down and identify all inflection points.

\[
f(x) = x^4 - 2x^3 - 36x + 12
\]

\( f(x) \) is continuous. Use the given information to sketch the graph.

\( f(-4) = 0; f(-2) = -2; f(-1) = -1; f(0) = 0; f(2) = 1; f(4) = 3 \)

5. \( f'(x) > 0 : (-2,2) \cup (2, \infty); f'(x) < 0 : (-\infty, -2) \)

\( f''(x) > 0 : (-\infty, -1) \cup (2, \infty); f''(x) < 0 : (-1, 2) \)