Concavity and Inflection Points

1. Given $f(x) = 4x^3 - 12x^2$, find all values of x for which the graph of f is concave down.

2. Given $f(x) = \frac{x}{x^2+1}$, find all values of x for which the graph of f is concave up.

3. Given $f(x) = -x^4 + 4x^3 - 4x + 1$, find all values of x for which the graph of f is concave down.