1. (3pts) Find the critical numbers of $f(x) = x^{\frac{1}{3}}(x + 4)$.

2. (7pts) Given $f(x) = 2 + 3x - x^3$.
   a) Show that $f'(x) = 3(1 + x)(1 - x)$.

   b) On what intervals is the graph of f increasing and decreasing?

   c) List the local extrema of f.

   d) Show that $f''(x) = -6x$.

   e) On what intervals is the graph of f concave up and down?

   f) List the inflection points of f.