Derivatives and the Shape of a Function's Graph

1. For the following functions, find (i) where $f'(x) = 0$, (ii) intervals of increase/decrease and local max/mins, (iii) where $f''(x) = 0$, (iv) intervals of concavity and inflection points, (v) sketch the graph of the function.

   (a) $f(x) = x^4 - 2x^2 + 3$

   (b) $f(x) = xe^x$.