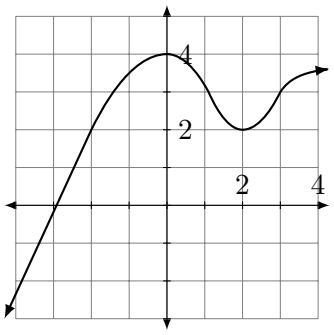
Show all work.

1. **(5 points)** Find the maximum and minimum values of the function $f(x) = x^3 - 3x^2 - 9x + 2$ on the interval $[-2, 2]$.

2. **(6 points)** Given the following graph of a function $f(x)$, find the following features, specifically saying so if a feature does not exist.



Intervals where the function is increasing:

Intervals where the function is decreasing:

Local maxima:

Local minima:

Global maxima:

Global minima:

3. **(9 points)** Answer the following questions about the function $f(x) = x^6 - 6x^4 + 2$.

   (a) **(3 points)** On which intervals is it increasing, and on which intervals is it decreasing? Label which is which.

   (b) **(2 points)** Identify the critical points of this function, and classify each as a local maximum, a local minimum, or a non-extremum.

   (c) **(3 points)** On which intervals is it concave up, and on which intervals is it concave down? Label which is which.

   (d) **(1 point)** Where are its points of inflection? If it has none, say so explicitly.