Show all of your work! No work will receive little or no credit.

Calculators should NOT be used on this assignment.

1. Identify the relative and absolute extrema of the graph shown below. Identify the extrema by stating the appropriate x-values of the extremum.

Relative Maximima: \( f(a) \)
Relative Minima: \( f(d) \)
Absolute Maxima: \( f(e) \)
Absolute Minima: \( f(g) \)

2. Identify the absolute extrema of the function \( f(x) = 2x^3 - 3x^2 - 12x + 1 \) on the interval \([-3, 3]\). Answers without supporting work will result in no credit.

Absolute Maximum: \( 8 \)
Absolute Minimum: \( -44 \)

\[
\begin{align*}
\frac{df}{dx} &= 6x^2 - 6x - 12 \\
6(x^2 - x - 2) &= 0 \\
(x - 2)(x + 1) &= 0 \\
x &= 2, \ x = -1
\end{align*}
\]

\[
\begin{align*}
f(-3) &= -54 - 27 + 36 + 1 = -44 \\
f(-1) &= -2 - 3 + 1 + 1 = 0 \\
f(2) &= 16 - 12 - 24 + 1 = -19 \\
f(3) &= 54 - 27 - 36 + 1 = -8
\end{align*}
\]