SECTION 4.1: MAXIMUM & MINIMUM VALUES

1. Sketch a graph $f(x)$ whose domain is the interval $[-1, 4]$ with the following properties:

   (a) f is continuous, has a local minimum at $x = 0$, an absolute minimum at $x = 4$ and an absolute maximum at $x = 2$.

   (b) f has an absolute minimum but no absolute maximum

   (c) f has a critical point at $x = 1$ but no maximum or minimum (of any type) at $x = 1$.

2. Find the absolute maximum and minimum values of $f(x) = x - x^{1/3}$ on the interval [-1,4]. Determine where those absolute maximum and minimum values occur.

3. Find the absolute maximum and minimum values of $f(x) = x + \dfrac{1}{x}$ on the interval [1/5,4]. Determine where those absolute maximum and minimum values occur.

4. Find the absolute maximum and minimum values of $f(x) = x^{2/3}$ on the interval [-8,8]. Determine where those absolute maximum and minimum values occur.