For an *absolute minimum* (or simply, *minimum*) we reverse the inequality to $f(c) \leq f(x)$. *(Absolute) extremum* means either a maximum or a minimum. Figure 5.2.1 has an absolute minimum at $x = a$ but has no absolute maximum. Observe that if D is a closed and bounded interval $[a, b]$, then f must have an absolute maximum and an absolute minimum. Review Theorem 4.3.5.

Example 5.2.7. The function $f : [-1, \infty) \to \Re$, defined by $f(x) = 5x^{2/3} - x^{5/3}$ and illustrated in Figure 5.2.2, has a relative and absolute maximum of 6 at $x = -1$, a relative minimum of 0 at $x = 0$, a relative maximum of approximately 4.7622 at $x = 2$, and no absolute minimum. Why? Note that $f'(-1) \neq 0$ and $f'(0)$ does not exist. □

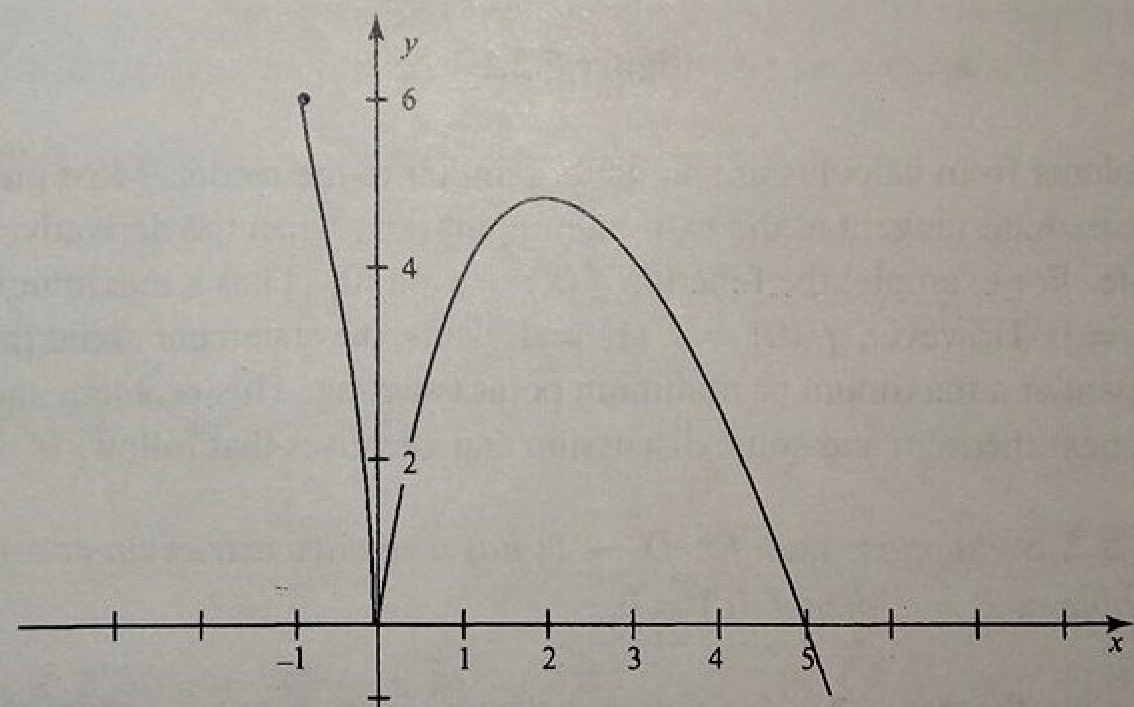

Figure 5.2.2