Answer on Question #49376 – Math - Calculus

Sketch the graph of a function f(x) on [0,3] which has the given properties

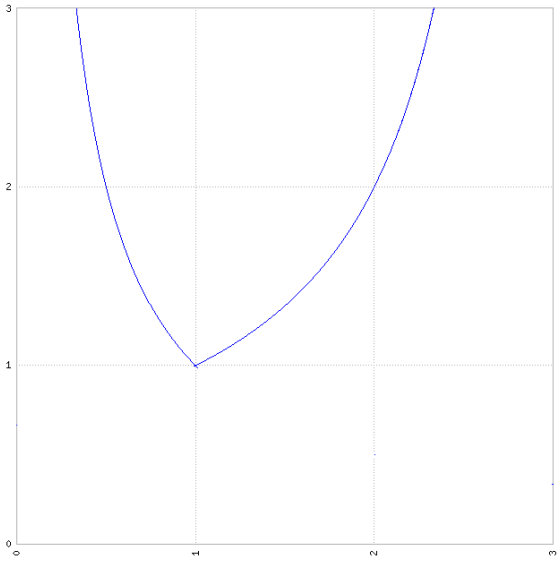
a) has a absolute minimum at x=1 but has no absolute maximum

b) has a global minimum at x=1 and is continuous but not differentiable at x=1

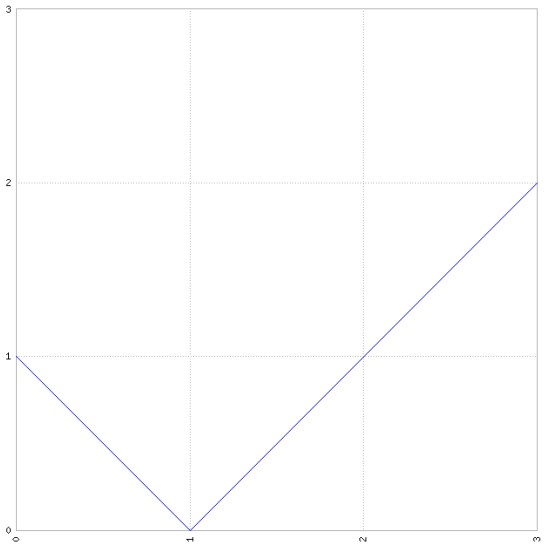
c) has an absolute maximum and an absolute minimum and is discontinuos

Solution.

a) $$f(x) = \begin{cases} \frac{1}{x}, & 0 < x \leq 1 \\ \frac{2}{3-x}, & 1 < x < 3 \end{cases}$$



b) $f(x) = |x - 1|$



c) $$f(x)=\begin{cases}\frac{1}{2}x, & 0\le x\le 1\\ \frac{1}{2}x+\frac{1}{2}, & 1<x\le 3\end{cases}$$