last                              first

Show all work, including mental steps, in a clearly organized way that speaks for itself. Use proper
mathematical notation, identifying expressions by their proper symbols (introducing them if necessary),
and use arrows and equal signs when appropriate. BOX final short answers. Always simplify
expressions.

① Evaluate the following limits which would be necessary in graphing the function

$f(x) = \dfrac{e^x - e}{x - 1}$ :    a) $\lim\limits_{x \to 1} f(x)$    b) $\lim\limits_{x \to -\infty} f(x)$    c) $\lim\limits_{x \to \infty} f(x)$ .

② Given $f(x) = x^{2/3}(x-6)^{1/3}$, $f'(x) = \dfrac{(x-4)}{x^{1/3}(x-6)^{2/3}}$ , $f''(x) = \dfrac{-8}{x^{4/3}(x-6)^{5/3}}$ ,

a) draw the sign $(+ - 0)$ chart for $f'$ and the stick figure plot above it,

b) draw the sign chart for $f''$ labeled by curvature icons: ⌣ ⌢ ,

c) find the coordinates $(x, y)$ of the local max/mins (identify them as max or min)
   and other critical points , and of the points of inflection.