Q1) Use the given the graph of $f$ to find the intervals for which $f'$ is increasing.

Q2) Find the limit if it exists.

(a) $\lim_{x \to \infty} (x \ln x)^{\frac{1}{\ln x}}$

(b) $\lim_{x \to 1} \frac{x^a - ax + a - 1}{(x - 1)^2}, a \in \mathbb{R}$