Problem for 2004 March

Communicated by Dan Jurca

Suppose $a \in \mathbf{R}$, $b \in \mathbf{R}$, $a < b$, $f:[a,b] \to \mathbf{R}$, and

$$x \in [a,b] \Rightarrow 0 < f''(x).$$

Find all values $c \in [a,b]$ such that the area of the region bounded by

the graph of $y=f(x)$,
the line tangent to the graph at the point $(c,f(c))$, and
the lines $x=a$ and $x=b$ is minimum.

Solution by Kurt Luoto