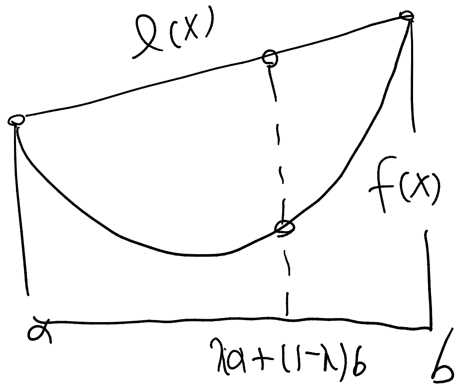
우림 11-2

2019년 8월 14일 수요일 오후 5:38



It suffices to prove that

$$f(\lambda a+(1-\lambda)b) \leq \underline{\lambda f(a)+(1-\lambda)f(b)}$$

for any $0 \leq \lambda \leq 1$.

$$= l(\lambda a+(1-\lambda)b)$$

$f''(x) \geq 0$ means that $f'(x)$ increases.

and by Mean Value Theorem.

$$\frac{f(\lambda a+(1-\lambda)b)-f(a)}{(1-\lambda)(b-a)} = f'(c) \quad (c \in (a,\ \lambda a+(1-\lambda)b))$$

$$\frac{f(b)-f(\lambda a+(1-\lambda)b)}{\lambda(b-a)} = f'(d) \quad (d \in (\lambda a+(1-\lambda)b,\ b))$$

Now from $f'(d) \geq f'(c)$, we get

$$\lambda f(\lambda a+(1-\lambda)b)-\lambda f(a) \leq (1-\lambda)f(b)-(1-\lambda)f(\lambda a+(1-\lambda)b)$$

$$\rightarrow \lambda f(a)+(1-\lambda)f(b) \geq f(\lambda a+(1-\lambda)b)$$