

# SK Hynix ML Courses - Convex Optimization in ML

## Solutions to Exercise Problems 2

TA Gyeongjo Hwang\*, Doyeon Kim†

June 30, 2019

1. (1st order condition of convex functions) Suppose  $f : \mathbf{R}^d \rightarrow \mathbf{R}$ ,  $\arg \min_{d \in \mathbf{R}} \mathcal{L}$ .

$$asdf = asdf \quad (1)$$

$$asdf = asdf \quad (2)$$

$$= a s dfasdfasdf \quad (3)$$

$$= asdfasdf \quad (4)$$

$$= asdf \quad (5)$$

$$= asdf \quad (6)$$

$$= W^{[1]} x^{(i)} + b^{[1]} \quad (7)$$

$$= W^{[1]} \in \mathbf{R}^{m \times n} \quad (8)$$

- (a) Suppose that  $adsklfjas;lkdfjasdl;kfjasdlk;$

$fjasd;lkfjadslkfjasf ;lkjasdl ;kfjasdl ;kfjadsl ;kfjsdalkfjal;$

$kefjeawoifuaewifjasoidfjasdlkvj;dlkvfbnmalkejga ; oiewjgeo; iaejgoisajerg adsklfjas;lkdfjasdl;kfjasdlk;$   
 $fjasd;lkfjadslkfjasf ;lkjasdl ;kfjasdl ;kfjadsl ;kfjsdalkfjal; kefjeawoifuaewifjasoidfjasdlkvj;dlkvfbnmalkejga$   
 $; oiewjgeo; iaejgoisajerg adsklfjas;lkdfjasdl;kfjasdlk; fjasd;lkfjadslkfjasf ;lkjasdl ;kfjasdl ;kfjadsl$   
 $;kfjsdalkfjal; kefjeawoifuaewifjasoidfjasdlkvj;dlkvfbnmalkejga ; oiewjgeo; iaejgoisajerg$

---

\*hkj4276@kaist.ac.kr

†dy.kim@kaist.ac.kr