

Open figure 2.2 of <https://udlbook.github.io/udlfigures/> (linear regression with least-squares loss). Sketch the following plots by hand (accuracy isn't critical, but try to capture the shape including curvature). Use the initial values (intercept = 1.20, slope = 0.2) for each plot while you sweep the other parameter. *If you have time, repeat this with  $w_2$  from the ReLU interactive notebook*

- a. Plot **intercept** on the x-axis and **loss** on the y-axis.      b. Plot **slope** on the x-axis and **loss** on the y-axis.

2. On both plots above, mark the points corresponding to intercept = 1.20 and slope = 0.2. Sketch the tangent lines at those points and use them to compute estimates of  $\frac{\delta \text{ loss}}{\delta \text{ intercept}}$  and  $\frac{\delta \text{ loss}}{\delta \text{ slope}}$ . Write down your estimates below.  
Discuss with your neighbors what this tells you about how you might adjust the parameters to reduce the loss.
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1. What was the most important concept from today for you?
2. What was the muddiest concept today?
3. How does what we did today connect with what you've learned before?
4. What would you like to review or clarify next time we meet?
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