Sheet 3

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Task 1

a) $\mathcal{L} = \frac{1}{n}\sum_{i=1}^{n}(y_i - \beta^T x_i)^2 + \lambda\|\beta\|_2^2 = \frac{1}{n}\sum_{i=1}^{n}(y_i - \beta_0 - \beta_1 x_{i1} - \beta_2 x_{i2})^2 + \lambda(\beta_0^2 + \beta_1^2 + \beta_2^2)$

$\beta_0 \longrightarrow 0$ for $\lambda \longrightarrow \infty$

b) $\mathcal{L} = \frac{1}{n}\sum_{i=1}^{n}(y_i - \beta^T x_i)^2 + \lambda(\beta_1^2 + \beta_2^2)$

c) For a): spheres centered at the origin

For b): cylinders around β_0-axis