Introduction to Big Data Analysis

Quiz 3 Reference Answer

1. C
2. B C
3. D
4. D
5. D
6. C
7.

Take $\tilde{\mathbf{X}} = \begin{bmatrix} \mathbf{X} \\ \sqrt{\lambda_2}\mathbf{I} \end{bmatrix}$ and $\tilde{\mathbf{y}} = \begin{bmatrix} \mathbf{y} \\ \mathbf{0} \end{bmatrix}$, then the elastic net is converted to standard Lasso as

$$\min_{\mathbf{w}} \left[(\mathbf{y} - \mathbf{X}\mathbf{w})^T (\mathbf{y} - \mathbf{X}\mathbf{w}) + \lambda_1 \|\mathbf{w}\|_1 + \lambda_2 \|\mathbf{w}\|_2^2 \right]$$
$$= \min_{\mathbf{w}} \left[(\tilde{\mathbf{y}} - \tilde{\mathbf{X}}\mathbf{w})^T (\tilde{\mathbf{y}} - \tilde{\mathbf{X}}\mathbf{w}) + \lambda_1 \|\mathbf{w}\|_1 \right]$$