The OLS likelihood function

From William Greene (2nd ed), Chapter 10, page 306:

The logl for the OLS model is:

$$\log L = -\frac{n}{2}\log 2\pi - \frac{n}{2}\log \sigma^2 - \frac{1}{2\sigma^2}(y - X\beta)'(y - X\beta)$$

The f.o.c. are:

$$
\begin{aligned}
\frac{\partial \log L}{\partial \beta} &= \frac{1}{\sigma^2}X'(y - X\beta) \\
\frac{\partial \log L}{\partial \sigma^2} &= -\frac{n}{2\sigma^2} + \frac{1}{2\sigma^4}(y - X\beta)'(y - X\beta)
\end{aligned}
$$