

# Some Solutions to HW 4

February 21, 2016

## The problems I plan to do

	Write-up	Code	Skipped
1	—	a,b*,c	d
2	—	a	b,c,d
3	—	—	all
4	SHOULD	DO	THIS
5	—	—	skip
6	—	—	all
7	some	—	some

\*Laplace Approximation is especially important!

**Q7**

$$\begin{aligned}\alpha|\alpha_1, \dots, \alpha_I &\sim N\left(\frac{\tau_\alpha \sum \alpha_i}{P_\alpha + n\tau_\alpha}, [P_\alpha + n\tau_\alpha]^{-1}\right) \\ \beta|\beta_1, \dots, \beta_I &\sim N\left(\frac{\tau_\beta \sum \beta_i}{P_\beta + n\tau_\beta}, [P_\beta + n\tau_\beta]^{-1}\right) \\ \alpha_i|\alpha &\sim N\left(\frac{\alpha\sigma^2\tau_\alpha + y_{i\cdot} - \beta_i t_{i\cdot}}{\sigma^2\tau_\alpha + n}, \frac{\sigma^2}{\sigma^2\tau_\alpha + n}\right)\end{aligned}$$

The others are just a similar type of thing...