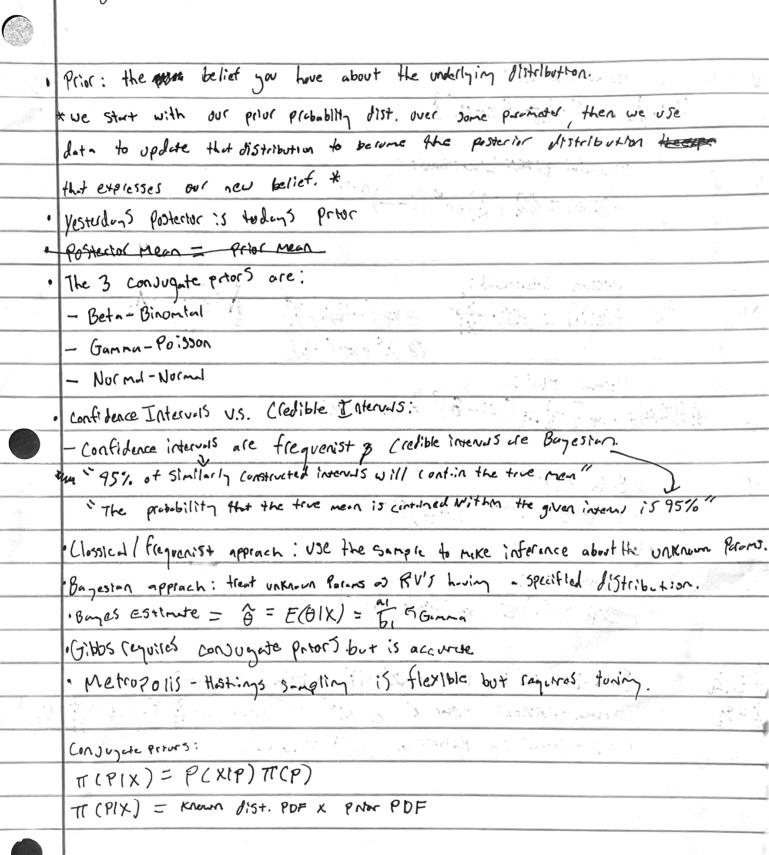
## Bayesian STAT Test # 1 Review



Normal likelihood: f(XIM) - exp { - 1262 (X-M)23 ... end Alle so they have the as some success in mortely to mile things of Binomial Box Likelihood:  $f(X(\theta) = M( ( ) \theta ) (1 - \theta) ) \cap K$ Lticelthood; 90:550 N 1/2 Q Xx exp(-X) Normal PDF: MANANT ex 2-1-2(1-8)23=11(11) Beth PDF: TI(0)= 00-1 (1-6) b-1 Orma PDF:
EXP TI(X) = exp(-BX) \ \alpha = 1 Beta-Binomial in Posterior & OIY N Beta Cata, b+Y) Germa-Poisson: Poster of BXIYN Gamma (a+ & Y; b+ & N;) Normal - Normal: Resported & MIX Normal ( )

Chapter 3 Diagnostics. R

Pour Convergence signs:

Jensity lits pourly.

Cheins do not converge.

Cheins do not converge.

Autocorreletion his nit idropped fortenough!

a Galmin invitaviriate post! R \( \sigma 1.1 \)

a Galmin invitaviriate post! R \( \sigma 1.1 \)

a Geneke diag |2| \( \sigma 2 \)

be duce look.

F35 ANDON, the Linker the better should be duce look.

How to improve convergence:

- . Increise # of Herestuns
- · Pick so more informative priors
- , Improve int velves
- , use a simpler of nore advinced algo model
- . use a more advenced algorithm

The the # of perents is less than Greater than the # of observations then
The Convergence will be super slow. That all perents are identificable.

Chapter 4 Linear-Regression, R BETES FLOWS. P. Cled Him - With - Linear-Herrossiun, R There are 3 different priors for the slopes in linear Parespien: #03/08 for more details · Uninformative Gaussian: B; N Normal (D(1000) Gaussian shrink ge:  $\beta_3 \sim Normal(0, \sigma_b^2)$  with  $\sigma_b^2 \sim InverseGamma (0.1, 0.1)$  $Proposition Lasso: <math>\beta_3 \sim DE(0, \sigma_b^2)$  with  $\sigma_b^2 \sim InverseGamma (0.1, 0.1)$  $Are both shrinkage Estimators. Are useful when we want a st-bler estimate of <math>\beta_1 \approx 15$ Acceded when  $\rho > 0$ .  $\gamma = ncol(1)$  ,  $\gamma = 1cn(2)$ 

 $B = \operatorname{org}_{B}^{\min} \left\{ \sum_{i=1}^{p} (y_i - \sum_{j=1}^{p} X_{ij} \beta_j)^2 + \lambda \sum_{j=1}^{p} \beta_j \right\}$ 

Chapter 5 pages Fuctors in Model-Selection in CAIC

for BIC, DIC, & WAIC the Smeller the better the model

DIC = Mean devince + particul devince Penalty = Penaltical devince

How well of a fit

bolince of fit v.s. complexity

WAT( = WAT(

Bores Foodol. Over 10 is stron BIZ with BIZ > 10 is strong evidence for model 1. Used for hypotheses testing provides evidence that the older supports one model over another. It A BIZ = X means that the dam is X throws more likely under the alterite hypothesis.

BF = p(Alterinte) / p(huil)

Posterior of 85  $\frac{\pi(m_1|Y)}{\pi(m_1|Y)} = \frac{f_1(Y)}{f_2(Y)} \frac{\pi(m_1)}{\pi(m_2)}$