Functional form

$$\mathcal{N}(x|\mu,\gamma^{-1}) = \frac{\sqrt{\gamma}}{\sqrt{2\pi}} e^{-\gamma \frac{(x-\mu)^2}{2}}$$

$$\mathcal{N}(x|\mu,\gamma^{-1}) \propto \gamma^{\frac{1}{2}} e^{-b\gamma}$$

$$p(\gamma) \propto \gamma^{\frac{1}{2}} e^{-b\gamma} ?$$

$$p(\gamma|x) = \frac{p(x|\gamma)p(\gamma)}{p(x)} \propto \gamma e^{-\gamma(b+\frac{(x-\mu)^2}{2})}$$