$p(x|\theta) \propto f(x,\theta)$ $\qquad$ $\log p(x|\theta) \stackrel{+}{=} \log f(x,\theta)$

$\log N(x|\mu, \tau^{-1})$

$= \log\left(\sqrt{\frac{\tau}{2\pi}}\, e^{-\frac{\tau}{2}(x-\mu)^2}\right)$

$\stackrel{+}{=} -\frac{\tau}{2}(x^2 - 2x\mu + \mu^2)$

$\stackrel{+}{=} -\frac{\tau}{2}x^2 + \frac{\tau}{2}2\mu x$

$-\frac{\tau}{2}$ is the coef. of x^2

$\tau\mu$ — // — x

$$\log GW(\mu, \tau \mid m, l, s, r)$$

$$= \log\left(\frac{r^s}{\Gamma(s)} \tau^{s-1} e^{-r\tau} \sqrt{\frac{\tau l}{2\pi}} e^{-\frac{\tau l}{2}(\mu - m)^2} \right)$$

$$\pm (s-1)\log\tau - r\tau + \frac{1}{2}\log\tau + \frac{1}{2}\log l - \frac{\tau l}{2}(\mu^2 - 2\mu m + m^2)$$

$$\pm (s-1)\log\tau - r\tau + \frac{1}{2}\log\tau - \frac{\tau l}{2}\mu^2 + \frac{\tau l}{2} 2\mu m - \frac{\tau l}{2} m^2$$