$$f = \left(\frac{1}{\sigma\sqrt{2\pi}}\right)^m \prod_{i=1}^{m} \exp\left(-(z_i-\mu)^2/(2\sigma^2)\right)$$

$$= \left(\frac{1}{\sigma\sqrt{2\pi}}\right)^m \prod^{m} \exp\left[-(z_i^2 - 2\mu z_i + \mu^2)/(2\sigma^2)\right]$$

$$= \frac{1}{\sigma\sqrt{2\pi}} \cancel{l} \exp\left[-(\Sigma z_i - 2\mu\Sigma z_i + m\mu^2/(2\sigma^2)\right]$$

$$g = \frac{1}{\sqrt{2\pi}\ \sigma/\sqrt{m}} \exp\left[-\left(\frac{\Sigma z_i}{m} - \mu\right)^2/(2\sigma^2/m)\right]$$

$$= \frac{1}{\sqrt{2\pi}\ \sigma/\sqrt{m}} \exp\left[-\left(\frac{\Sigma z_i^2}{m^2} - 2\frac{\Sigma z_i}{m}\mu + \mu^2\right)/(2\sigma^2/m)\right]$$

To show that $h(z) = \frac{f}{g}$ does not depend on μ I ~~have~~ can ignore the constants infront of the exponential function

$$\frac{f}{g} = \frac{\exp[-(\Sigma z_1^2 - 2\mu\Sigma z_1 + \mu^2 m)/(2\sigma^2)]}{\exp[-(\frac{\Sigma z_1^2}{m} - 2\mu\Sigma z_1 + \mu^2 m)/(2\sigma^2)]}$$

$$= \exp[(-\Sigma z_1^2 + 2\mu\Sigma z_1 - \mu^2 m + \frac{\Sigma z_1^2}{m} + 2\mu\Sigma z_1 - \mu^2 m)/(2\sigma^2)]$$

$$= \exp[(-\Sigma z_1^2 + \frac{\Sigma z_1^2}{m})/(2\sigma^2)]$$

Which does not depend on μ