$$P(y = 1|x)$$

$$= \frac{P(x|y = 1)P(y = 1)}{P(x)}$$

$$= \frac{P(x|y = 1)P(y = 1)}{P(x|y = 0)P(y = 0) + P(x|y = 1)P(y = 1)}$$

$$= \frac{\gamma \prod_{j=1}^{d} \frac{1}{\sqrt{2\pi}\sigma_j} e^{-\frac{\left(x_j - \mu_j^1\right)^2}{2\sigma_j^2}}}{(1 - \gamma) \prod_{j=1}^{d} \frac{1}{\sqrt{2\pi}\sigma_j} e^{-\frac{\left(x_j - \mu_j^0\right)^2}{2\sigma_j^2}} + \gamma \prod_{j=1}^{d} \frac{1}{\sqrt{2\pi}\sigma_j} e^{-\frac{\left(x_j - \mu_j^1\right)^2}{2\sigma_j^2}}}$$

$$P(y = 0|x)$$

$$= \frac{P(x|y = 0)P(y = 0)}{P(x)}$$

$$= \frac{P(x|y = 0)P(y = 0)}{P(x|y = 0)P(y = 0) + P(x|y = 1)P(y = 1)}$$

$$= \frac{(1 - \gamma) \prod_{j=1}^{d} \frac{1}{\sqrt{2\pi}\sigma_j} e^{-\frac{\left(x_j - \mu_j^0\right)^2}{2\sigma_j^2}}}{(1 - \gamma) \prod_{j=1}^{d} \frac{1}{\sqrt{2\pi}\sigma_j} e^{-\frac{\left(x_j - \mu_j^0\right)^2}{2\sigma_j^2}} + \gamma \prod_{j=1}^{d} \frac{1}{\sqrt{2\pi}\sigma_j} e^{-\frac{\left(x_j - \mu_j^1\right)^2}{2\sigma_j^2}}}$$