13.15

(13.33)に(13.58)、(13.60)を入れると

$$\gamma(z_n) = \frac{\alpha(z_n)\beta(z_n)}{p(X)} \leftarrow (13.33)$$

(13.58) (13.60)

$$= \frac{\left(\prod_{m=1}^{n} c_m\right)\hat{\alpha}(z_n)\left(\prod_{m=n+1}^{N} c_m\right)\hat{\beta}(z_n)}{p(X)}$$

(13.63)

$$\left(\prod_{m=1}^{n} c_m\right)\left(\prod_{m=n+1}^{N} c_m\right) = \prod_{m=1}^{N} c_m = p(X)$$ より

$$= \hat{\alpha}(z_n)\hat{\beta}(z_n) \quad \cdots (13.64)$$

を得る。

(13.43)に(13.58)、(13.60)を入れると

$$\xi(z_{n-1}, z_n) = \frac{\alpha(z_{n-1})p(x_n|z_n)p(z_n|z_{n-1})\beta(z_n)}{p(X)} \leftarrow (13.43)$$

(13.58)

$$= \frac{\left(\prod_{m=1}^{n-1} c_m\right)\hat{\alpha}(z_{n-1})p(x_n|z_n)p(z_n|z_{n-1})\left(\prod_{m=n+1}^{N} c_m\right)\hat{\beta}(z_n)}{p(X)}$$

$$= (c_n)^{-1}\hat{\alpha}(z_{n-1})p(x_n|z_n)p(z_n|z_{n-1})\hat{\beta}(z_n) \quad \cdots (13.65)$$

を得る。

$$\frac{\left(\prod_{m=1}^{n-1} c_m\right)\left(\prod_{m=n+1}^{N} c_m\right)}{p(X)} = \frac{\left(\prod_{m=1}^{n-1} c_m\right)\left(\prod_{m=n+1}^{N} c_m\right)}{\prod_{m=1}^{N} c_m} = (c_n)^{-1}$$

$\leftarrow (13.63)$