The $b_k(z)$ are polymomials in z,

$\mathbb{1}[\|Z/x\|>\eta]$

So $\cancel{\int b_k(z)}$

Can write

$$\int p(x) \int \mathbb{1}[\|Z/x\| > \eta]\ \mathbb{1}[X > V]\ \left|\det\left(Z - \frac{X\Lambda}{\sigma^2}\right)\right| dp(z)\,dx$$

on $\mathbb{1}[x > v]$, $\left|\frac{1}{x}\right| < \frac{1}{V}$.

$(v > 0)$

$$\Rightarrow \left\|\frac{Z}{X}\right\| < \left\|\frac{Z}{V}\right\|$$

So $\left\|\frac{Z}{X}\right\| > \eta \Rightarrow \|Z/v\| > \eta$.

$$\Rightarrow \mathbb{1}[\|Z/x\| > \eta] \leq \mathbb{1}[\|Z/v\| > \eta]$$

$\boxed{e^{-z^T \Sigma z}}$

$\Leftarrow$ ~~$\int p(x) \int \mathbb{1}[\|Z/v\| > \eta]\ \mathbb{1}[$~~

$$\int_v^\infty p(x) \int \mathbb{1}[\|Z/v\| > \eta] \sum_{k=0}^{D} |b_k(z)|\, X^k\, dp(z)\,dx$$

$e^{\Lambda z}$

$$\leq \int_v^\infty p(x) \int_{\|Z/V\| > \eta} \cancel{\mathbb{1}[\|Z/V\| > \eta]} \frac{\det(\Lambda)}{\sigma^{2D}} X^D\, dp(z)\,dx.$$

$$+ \int_v^\infty \int_{\mathbb{R}^{D(D+1)/2}} \sum_{k=0}^{D-1} |b_k(z)|\, X^k\, dp(z)\,dx.$$

real!!