

Tabel 1

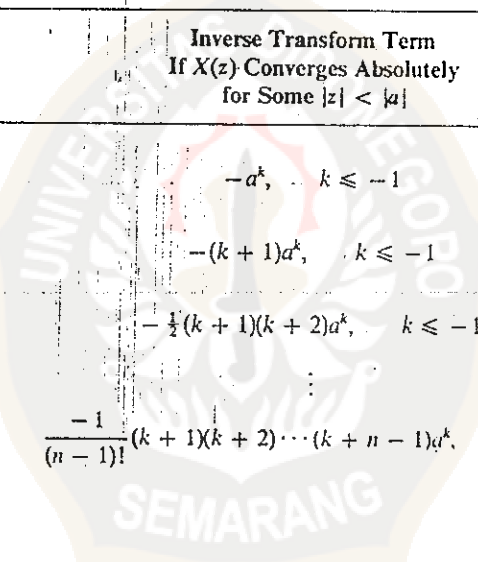
Transformasi-transformasi -Z dari Barisan-barisan f_k

f_k	$F(z)$
1. δ_k	1, all z
2. 1, $k \geq 0$	$(1 - z^{-1})^{-1}$, $1 < z $
3. k , $k \geq 0$	$z^{-1}(1 - z^{-1})^{-2}$, $1 < z $
4. k^n , $k \geq 0$	$\left(-z \frac{d}{dz}\right)^n (1 - z^{-1})^{-1}$, $1 < z $
5. $\binom{k}{n}$, $n \leq k$	$z^{-n}(1 - z^{-1})^{n+1}$, $0 < z $
6. $\binom{n}{k}$, $0 \leq k \leq n$	$(1 + z^{-1})^n$, $0 < z $
7. α^k , $k \geq 0$	$(1 - \alpha z^{-1})^{-1}$, $ \alpha < z $
8. $k^n \alpha^k$, $k \geq 0$	$\left(-z \frac{d}{dz}\right)^n (1 - \alpha z^{-1})^{-1}$, $ \alpha < z $
9. α^k , $k < 0$	$-(1 - \alpha z^{-1})^{-1}$, $ z < \alpha $
10. $k^n \alpha^k$, $k < 0$	$-\left(-z \frac{d}{dz}\right)^n (1 - \alpha z^{-1})^{-1}$, $ z < \alpha $
11. $\alpha^{ k }$, all k	$(1 - \alpha^2)[(1 - \alpha z)(1 - \alpha z^{-1})]^{-1}$, $ z < \alpha < \left \frac{1}{\alpha}\right $
12. $\frac{1}{k}$, $k > 0$	$-\ln(1 - z^{-1})$, $1 < z $
13. $\cos \alpha k$, $k \geq 0$	$(1 - z^{-1} \cos \alpha)(1 - 2z^{-1} \cos \alpha + z^{-2})^{-1}$, $1 < z $
14. $\sin \alpha k$, $k \geq 0$	$z^{-1} \sin \alpha (1 - 2z^{-1} \cos \alpha + z^{-2})^{-1}$, $1 < z $
15. $a \cos \alpha k + b \sin \alpha k$, $k \geq 0$	$[a + z^{-1}(b \sin \alpha - a \cos \alpha)](1 - 2z^{-1} \cos \alpha + z^{-2})^{-1}$, $1 < z $
16. $c \cos \alpha k + \left(\frac{d + c \cos \alpha}{\sin \alpha}\right) \sin \alpha k$, $k \geq 0$	$(c + d z^{-1})(1 - 2z^{-1} \cos \alpha + z^{-2})^{-1}$, $1 < z $
17. $\cosh \alpha k$, $k \geq 0$	$(1 - z^{-1} \cosh \alpha)(1 - 2z^{-1} \cosh \alpha + z^{-2})^{-1}$, $\max \left\{ z , \left \frac{1}{z} \right \right\} < z $
18. $\sinh \alpha k$, $k \geq 0$	$(z^{-1} \sinh \alpha)(1 - 2z^{-1} \cosh \alpha + z^{-2})^{-1}$, $\max \left\{ z , \left \frac{1}{z} \right \right\} < z $

Tabel 2

Transformasi Invers dari Suku-suku Pecahan Per Bagian $X(z)$

Partial Fraction Term	Inverse Transform Term If $X(z)$ Converges Absolutely for Some $ z > a $
$\frac{z}{z-a}$	$a^k, \quad k \geq 0$
$\frac{z^2}{(z-a)^2}$	$(k+1)a^k, \quad k \geq 0$
$\frac{z^3}{(z-a)^3}$	$\frac{1}{2}(k+1)(k+2)a^k, \quad k \geq 0$
\vdots	\vdots
$\frac{z^n}{(z-a)^n}$	$\frac{1}{(n-1)!}(k+1)(k+2)\cdots(k+n-1)a^k, \quad k \geq 0$
Partial Fraction Term	Inverse Transform Term If $X(z)$ Converges Absolutely for Some $ z < a $
$\frac{z}{z-a}$	$-a^k, \quad k \leq -1$
$\frac{z^2}{(z-a)^2}$	$-(k+1)a^k, \quad k \leq -1$
$\frac{z^3}{(z-a)^3}$	$-\frac{1}{2}(k+1)(k+2)a^k, \quad k \leq -1$
\vdots	\vdots
$\frac{z^n}{(z-a)^n}$	$\frac{-1}{(n-1)!}(k+1)(k+2)\cdots(k+n-1)a^k, \quad k \leq -1$



Tabel 3

Transformasi-transformasi Laplace Yang Banyak Digunakan

$f(t)$	$F(s)$	Convergence Region
1. $e^{-at} \xi(t)$	$\frac{1}{s+a}$	$-\text{Re}(a) < \text{Re}(s)$
2. $\xi(t)$	$\frac{1}{s}$	$0 < \text{Re}(s)$
3. $t \xi(t)$	$\frac{1}{s^2}$	$0 < \text{Re}(s)$
4. $t^n \xi(t)$	$n!/s^{n+1}$	$0 < \text{Re}(s)$
5. $\delta(t)$	1	All s
6. $\delta^{(1)}(t)$	s	All s
7. $\text{sgn } t$	$\frac{2}{s}$	$\text{Re}(s) = 0$
8. $-\xi(-t)$	$\frac{1}{s}$	$\text{Re}(s) < 0$
9. $te^{-at} \xi(t)$	$\frac{1}{(s+a)^2}$	$-\text{Re}(a) < \text{Re}(s)$
10. $t^n e^{-at} \xi(t)$	$\frac{n!}{(s+a)^{n+1}}$	$-\text{Re}(a) < \text{Re}(s)$
11. $e^{-a t } \xi(t)$	$\frac{2a}{a^2 - s^2}$	$-\text{Re}(a) < \text{Re}(s) < \text{Re}(a)$
12. $(1 - e^{-at}) \xi(t)$	$\frac{a}{s(s+a)}$	$\max [0, -\text{Re}(a)] < \text{Re}(s)$
13. $\cos \omega t \xi(t)$	$\frac{s}{s^2 + \omega^2}$	$0 < \text{Re}(s)$
14. $\sin \omega t \xi(t)$	$\frac{\omega}{s^2 + \omega^2}$	$0 < \text{Re}(s)$
15. $e^{-\sigma t} \cos \omega t \xi(t)$	$\frac{s + \sigma}{(s + \sigma)^2 + \omega^2}$	$-\sigma < \text{Re}(s)$
16. $e^{-\sigma t} \sin \omega t \xi(t)$	$\frac{\omega}{(s + \sigma)^2 + \omega^2}$	$-\sigma < \text{Re}(s)$
17. $\begin{cases} 1 - t , & t < 1 \\ 0, & t > 1 \end{cases}$	$\left(\frac{\sinh s/2}{s/2} \right)^2$	All s
18. $\sum_{n=0}^{\infty} \delta(t - nT)$	$\frac{1}{1 - e^{-sT}}$	All s