Fórmula general

$$ax^2 + bx + c = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

Identidades Trigonométricas

$\csc(\theta) = \frac{1}{\operatorname{sen}(\theta)}$

$\sec(\theta) = \frac{1}{\cos(\theta)}$

$\tan(\theta) = \frac{\operatorname{sen}(\theta)}{\cos(\theta)}$

$\cot(\theta) = \frac{\cos(\theta)}{\operatorname{sen}(\theta)} = \frac{1}{\tan(\theta)}$

$\operatorname{sen}^2(\theta) + \cos^2(\theta) = 1$

$\tan^2(\theta) + 1 = \sec^2(\theta)$

$\cot^2(\theta) + 1 = \csc^2(\theta)$

$\operatorname{sen}(\alpha \pm \beta) = \operatorname{sen}(\alpha)\cos(\beta) \pm \operatorname{sen}(\beta)\cos(\alpha)$

$\cos(\alpha \pm \beta) = \cos(\alpha)\cos(\beta) \mp \operatorname{sen}(\beta)\operatorname{sen}(\alpha)$

$\tan(\alpha \pm \beta) = \frac{\tan(\alpha) \pm \tan(\beta)}{1 \mp \tan(\alpha)\tan(\beta)}$

$\operatorname{sen}(2\theta) = 2\operatorname{sen}(\theta)\cos(\theta)$

$\cos(2\theta) = \cos^2(\theta) - \operatorname{sen}^2(\theta) = 1 - 2\operatorname{sen}^2(\theta) =$
$= 2\cos^2(\theta) - 1$

$\tan(2\theta) = \frac{2\tan(\theta)}{1-\tan^2(\theta)}$

$\operatorname{sen}^2(\theta) = \frac{1-\cos(2\theta)}{2}$

$\cos^2(\theta) = \frac{1+\cos(2\theta)}{2}$

$\operatorname{sen}(\alpha)\operatorname{sen}(\beta) = \frac{\cos(\alpha-\beta)-\cos(\alpha+\beta)}{2}$

$\cos(\alpha)\cos(\beta) = \frac{\cos(\alpha-\beta)+\cos(\alpha+\beta)}{2}$

$\operatorname{sen}(\alpha)\cos(\beta) = \frac{\operatorname{sen}(\alpha-\beta)+\operatorname{sen}(\alpha+\beta)}{2}$

$\cos(\alpha) - \cos(\beta) = -2\operatorname{sen}\left(\frac{\alpha+\beta}{2}\right)\operatorname{sen}\left(\frac{\alpha-\beta}{2}\right)$

$\cos(\alpha) + \cos(\beta) = 2\cos\left(\frac{\alpha+\beta}{2}\right)\cos\left(\frac{\alpha-\beta}{2}\right)$

$\operatorname{sen}(\alpha) + \operatorname{sen}(\beta) = 2\operatorname{sen}\left(\frac{\alpha+\beta}{2}\right)\cos\left(\frac{\alpha-\beta}{2}\right)$

$\operatorname{sen}(\alpha) - \operatorname{sen}(\beta) = 2\operatorname{sen}\left(\frac{\alpha-\beta}{2}\right)\cos\left(\frac{\alpha+\beta}{2}\right)$

α		$\operatorname{sen}(\alpha)$	$\cos(\alpha)$	$\tan(\alpha)$
$0°$	0	0	1	0
$30°$	$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}}$
$45°$	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1
$60°$	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$
$90°$	$\frac{\pi}{2}$	1	0	-

Propiedades de los Logaritmos

$\log_b a = c \Leftrightarrow b^c = a$

$\log_a c = \frac{\log_b c}{\log_b a}$

$\log_b(xy) = \log_b(x) + \log_b(y)$

$\log_b\left(\frac{x}{y}\right) = \log_b(x) - \log_b(y)$

$\log_b(x^y) = y\log_b(x)$

$\log_b(\sqrt[y]{x}) = \frac{\log_b x}{y}$

Funciones hiperbólicas

$\operatorname{senh}(x) = \frac{e^x - e^{-x}}{2}$

$\cosh(x) = \frac{e^x + e^{-x}}{2}$

$\tanh(x) = \frac{\operatorname{senh}(x)}{\cosh(x)}$

$\cosh^2(x) - \operatorname{senh}^2(x) = 1$

$1 - \tanh^2(\theta) = \operatorname{sech}^2(\theta)$

$\coth^2(x) - 1 = \operatorname{csch}^2(\theta)$

Algunos Límites

$\lim\limits_{x\to 0} \frac{\operatorname{sen}(x)}{x} = 1$

$\lim\limits_{x\to 0} \frac{1-\cos(x)}{x} = 0 \qquad \lim\limits_{x\to 0} \frac{1-\cos(x)}{x^2} = \frac{1}{2}$

$\lim\limits_{x\to 0} \frac{e^x-1}{x} = 1$

$\lim\limits_{x\to\infty} \left(1+\frac{1}{x}\right)^x = \lim\limits_{x\to 0}(1+x)^{\frac{1}{x}} = e$

Tabla de Derivadas

$f'(x) = \lim\limits_{h\to 0} \frac{f(x+h)-f(x)}{h} = \lim\limits_{h\to x} \frac{f(x)-f(h)}{x-h}$

$D(uv) = uv' + u'v$

$D\left(\frac{u}{v}\right) = \frac{vu'-uv'}{v^2}$

$D(au) = au'$

$D(u^n) = nu^{n-1}u'$

$D(e^u) = e^u u'$

$D(a^u) = \ln(a)a^u u'$

$D(u^v) = u^{v-1}(uv'\ln(u) + vu')$

$D(\ln(u)) = \frac{u'}{u}$

$D(\log_a(u)) = \frac{u'}{u\ln(a)}$

$D(\operatorname{sen}(u)) = \cos(u)u'$

$D(\cos(u)) = -\operatorname{sen}(u)u'$

$D(\tan(u)) = \sec^2(u)u'$

$D(\sec(u)) = \sec(u)\tan(u)u'$

$D(\csc(u)) = -\csc(u)\cot(u)u'$

$D(\cot(u)) = -\csc^2(u)u'$

$D(\operatorname{arc\,sen}(u)) = \frac{u'}{\sqrt{1-u^2}}$

$D(\arccos(u)) = -\frac{u'}{\sqrt{1-u^2}}$

$D(\arctan(u)) = \frac{u'}{1+u^2}$

$D(\operatorname{arcsec}(u)) = \frac{u'}{u\sqrt{u^2-1}}$

$D(\operatorname{senh}(u)) = \cosh(u)u'$

$D(\cosh(u)) = \operatorname{senh}(u)u'$

$D(\tanh(u)) = \operatorname{sech}^2(u)u'$

$D(\operatorname{sech}(u)) = -\operatorname{sech}(u)\tanh(u)u'$

$D(\operatorname{csch}(u)) = -\operatorname{csch}(u)\coth(u)u'$

$D(\coth(u)) = -\operatorname{csch}^2(u)u'$

$D(f^{-1}(x)) = \frac{1}{f'(f^{-1}(x))}$

Tabla de Integrales

$\int u\,dv = uv - \int v\,du$

$\int u^n du = \frac{u^{n+1}}{n+1}$ si $n \neq -1$

$\int \frac{1}{u} du = \ln|u|$

$\int \operatorname{sen}(u)du = -\cos(u)$

$\int \cos(u)du = \operatorname{sen}(u)$

$\int \tan(u)du = \ln|\sec(u)| = -\ln|\cos(u)|$

$\int \sec(u)du = \ln|\sec(u) + \tan(u)|$

$\int \csc(u)du = \ln|\csc(u) - \cot(u)|$

$\int \cot(u)du = \ln|\operatorname{sen}(u)|$

$\int \sec^2(u)du = \tan(u)$

$\int \csc^2(u)du = -\cot(u)$

$\int \sec(u)\tan(u)du = \sec(u)$

$\int \csc(u)\cot(u)du = -\csc(u)$

$\int \operatorname{sen}^2(u)du = \frac{u}{2} - \frac{\operatorname{sen}(2u)}{4}$

$\int \cos^2(u)du = \frac{u}{2} + \frac{\operatorname{sen}(2u)}{4}$

$\int e^u du = e^u$

$\int a^u du = \frac{a^u}{\ln(a)}$

$\int \frac{du}{a^2+u^2} = \frac{1}{a}\arctan\left(\frac{u}{a}\right)$

$\int \frac{du}{a^2-u^2} = \frac{1}{2a}\ln\left|\frac{u+a}{u-a}\right|$

$\int \frac{du}{u^2-a^2} = \frac{1}{2a}\ln\left|\frac{u-a}{u+a}\right|$

$\int \sqrt{u^2 \pm a^2}du = \frac{u\sqrt{u^2\pm a^2}}{2} \pm \frac{a^2\ln|u+\sqrt{u^2\pm a^2}|}{2}$

$\int \sqrt{a^2-u^2}du = \frac{u}{2}\sqrt{a^2-u^2} + \frac{a^2}{2}\operatorname{arc\,sen}\left(\frac{u}{a}\right)$

$\int \frac{du}{\sqrt{a^2-u^2}} = \operatorname{arc\,sen}\left(\frac{u}{a}\right)$

$\int \frac{du}{\sqrt{u^2\pm a^2}} = \ln\left|u + \sqrt{u^2\pm a^2}\right|$

$\int \frac{du}{u\sqrt{u^2-a^2}} = \frac{1}{a}\operatorname{arcsec}\left(\frac{u}{a}\right)$

$\int \operatorname{senh}(u)du = \cosh(u)$

$\int \cosh(u)du = \operatorname{senh}(u)$

$\int \operatorname{sech}^2(u)du = \tanh(u)$

$\int \operatorname{csch}^2(u)du = -\coth(u)$

$\int \operatorname{sech}(u)\tanh(u)du = -\operatorname{sech}(u)$

$\int \operatorname{csch}(u)\coth(u)du = -\operatorname{csch}(u)$

$\int x^m(a+bx^n)^{\frac{p}{q}}dx$, $(p,q) = 1$

Si $\frac{m+1}{n} \in \mathbb{Z}$, $t^q = a + bx^n$

Si $\frac{m+1}{n} + \frac{p}{q} \in \mathbb{Z}$, $t^q = ax^{-n} + b$

$R(\operatorname{sen}(x), \cos(x))$

$t = \tan\left(\frac{x}{2}\right)$; $dx = \frac{2dt}{1+t^2}$

$\operatorname{sen}(x) = \frac{2t}{1+t^2}$; $\cos(x) = \frac{1-t^2}{1+t^2}$

$R(\operatorname{sen}(x), \cos(x)) = R(-\operatorname{sen}(x), -\cos(x))$

$t = \tan(x)$; $dx = \frac{dt}{1+t^2}$

$\operatorname{sen}(x) = \frac{t}{\sqrt{1+t^2}}$; $\cos(x) = \frac{1}{\sqrt{1+t^2}}$

Curvas Paramétricas: $r(t) = x(t)\mathbf{i} + y(t)\mathbf{j}$

$r' = x'\mathbf{i} + y'\mathbf{j} \qquad v = r'; \qquad T = \frac{r'}{|r'|};$

$a = r''; \qquad m = \frac{dy}{dx} = \frac{y'}{x'}; \qquad \frac{dy^2}{dx^2} = \frac{m'}{x'}$

Volumen del sólido al rotar alrededor del eje:

X: $\pi\int f^2(x)dx$ **Y**: $2\pi\int xf(x)dx$

Longitud de arco: $\int\sqrt{x'^2+y'^2} \qquad \int\sqrt{1+y'^2}$

Área de la superficie rotar alrededor del eje:

X: $2\pi\int f\sqrt{1+f'^2}$ **Y**: $2\pi\int x\sqrt{1+f'^2}$

X: $2\pi\int y\sqrt{x'^2+y'^2}$ **Y**: $2\pi\int x\sqrt{x'^2+y'^2}$

Centroide

$M = \int f dx;\ M_y = \int xf dx;\ M_x = \frac{1}{2}\int f^2 dx$

$\overline{x} = \frac{M_y}{M} \quad \overline{y} = \frac{M_x}{M}$

Coordenadas Polares

$x = r\cos(\theta); \quad y = r\operatorname{sen}(\theta); \quad r^2 = x^2 + y^2$

$$\theta = \begin{cases} \arctan\left(\frac{y}{x}\right) & \text{si } x > 0 \\ \arctan\left(\frac{y}{x}\right) + \pi & \text{si } x < 0 \\ \operatorname{sgn}(y)\frac{\pi}{2} & \text{si } x = 0 \end{cases}$$

Longitud: $\int\sqrt{r^2+r'^2}$ Área: $\int\frac{1}{2}r^2 d\theta$

Pendiente: $\frac{r\cos(\theta)+r'\operatorname{sen}(\theta)}{r'\cos(\theta)-r\operatorname{sen}(\theta)}$

Coordenadas Esféricas

$x = p\operatorname{sen}(\phi)\cos(\theta)$, $y = p\operatorname{sen}(\phi)\operatorname{sen}(\theta)$

$z = p\cos(\phi)$

Criterio de derivadas parciales

Si $\nabla f(a,b) = \langle 0,0\rangle, \quad A = \frac{\partial^2 f}{\partial x^2}(a,b)$

$B = \frac{\partial^2 f}{\partial x\partial y}(a,b), \quad C = \frac{\partial^2 f}{\partial y^2}(a,b), \quad \Delta = B^2 - AC$

$\Delta > 0 \Rightarrow (a,b,f(a,b))$ es un punto silla.

$\Delta < 0$ y $A > 0 \Rightarrow f(a,b)$ es un mínimo local.

$\Delta < 0$ y $A < 0 \Rightarrow f(a,b)$ es un máximo local.

Series

$\sum_{k=1}^n k = \frac{n(n+1)}{2} \qquad \sum_{k=1}^n k^2 = \frac{n(n+1)(2n+1)}{6}$

$\sum_{k=1}^n k^3 = \left(\frac{n(n+1)}{2}\right)^2 \qquad \sum_{k=0}^n r^k = \frac{r^{n+1}-1}{r-1}$

$\sum_{k=0}^\infty x^k = \frac{1}{1-x}$, si $|x| < 1 \qquad \sum_{k=0}^\infty \frac{x^k}{k!} = e^x$

$\sum_{k=0}^\infty \frac{(-1)^k x^{2k}}{(2k)!} = \cos(x)$

$\sum_{k=0}^\infty \frac{(-1)^k x^{2k+1}}{(2k+1)!} = \operatorname{sen}(x)$

Ecuación del Plano

Pasa por (x_0, y_0, z_0), perpendicular a (A,B,C)

$$A(x-x_0) + B(y-y_0) + C(z-z_0) = 0$$

Producto Punto y Producto Cruz

$u \cdot v = |u||v|\cos(\alpha)$

$\operatorname{proy}_B A = \frac{A\cdot B}{|B|^2}B \qquad \operatorname{comp}_B A = \frac{A\cdot B}{|B|}$

$|A \times B| = |A||B|\operatorname{sen}(\alpha)$

$$(A \times B)\cdot C = \begin{pmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{pmatrix}$$

Ecuación lineal de primer orden
$y' + py = q$; $y_h = e^{-\int p}$; $u = \int \frac{q}{y_h}$; $y = uy_h + ky_h$

Ecuación de Bernoulli $y' + py = qy^n$. Sustituir $y = u^{\frac{1}{1-n}}$.
Ecuación exacta $M(x,y)dx + N(x,y)dy = 0$ es exacta $\Leftrightarrow M_y = N_x$.
Factor integrante para hacerla exacta:
$\mu(x) = e^{\int \frac{M_y - N_x}{N} dx}$ o $\mu(y) = e^{\int \frac{N_x - M_y}{M} dy}$
Ecuación lineal con coeficientes constantes
$\alpha_n y^{(n)} + \alpha_{n-1} y^{(n-1)} + \cdots + \alpha_0 y = 0$
Si r es raíz simple y real: $y = Ce^{rx}$
Si $\alpha \pm \beta i$ son raíces simples $y = C_1 e^{\alpha x}\cos(\beta x) + C_2 e^{\alpha x}\operatorname{sen}(\beta x)$
Si r es raíz de multiplicidad m $y = C_1 e^{rx} + C_2 x e^{rx} + \cdots + C_m x^{m-1} e^{rx}$
Ecuación de Euler
$\alpha_n x^n y^{(n)} + \alpha_{n-1} x^{n-1} y^{(n-1)} + \cdots + \alpha_{n-1} x y' + \alpha_0 y = 0$
Si r es raíz simple y real $y = Cx^r$
Si $\alpha \pm \beta i$ son raíces simples: $y = C_1 x^{\alpha}\cos(\beta \ln(x)) + C_2 x^{\alpha}\operatorname{sen}(\beta\ln(x))$
Si r es raíz de multiplicidad m: $y = C_1 x^r + C_2 x^r \ln(x) + \cdots + C_m x^r \ln^{m-1}$
Formas de solución para $\alpha_n y^{(n)} + \alpha_{n-1} y^{(n-1)} + \cdots + \alpha_0 y = f(x)$
Las raíces del polinomio característico son de multiplicidad r
P, Q, R y S son polinomios de grado m, n o k según se indique. $k = \text{máx}\{m, n\}$

$f(x)$	Raíces	Formas de la solución
P_n	$x = 0$	$x^r Q_n$
$P_n e^{\alpha x}$, α real	α	$x^r Q_n e^{\alpha x}$
$P_m\cos(\beta x) + Q_n \operatorname{sen}(\beta x)$	$\pm\beta$	$x^r(R_k\cos(\beta x) + S_k\operatorname{sen}(\beta x))$
$e^{\alpha x}(P_m\cos(\beta x) + Q_n\operatorname{sen}(\beta x))$	$\alpha + \beta i$	$x^r e^{\alpha x}(R_k\cos(\beta x) + S_k\operatorname{sen}(\beta x))$

Transformada de Laplace

$f(t)$	$\mathcal{L}(f) = F(p)$
$f(t)$	$\int_0^\infty e^{-pt} f(t)dt$
$f(t) + kg(t)$	$F(P) + kG(P)$
1	$\frac{1}{p}$, $p > 0$
$e^{\alpha t}$	$\frac{1}{p-\alpha}$, $p > 0$
$\operatorname{sen}(\alpha t)$	$\frac{\alpha}{p^2+\alpha^2}$, $p > 0$
$\cos(\alpha t)$	$\frac{p}{p^2+\alpha^2}$, $p > 0$
$\operatorname{senh}(\alpha t)$	$\frac{\alpha}{p^2-\alpha^2}$, $p > 0$
$\cosh(\alpha t)$	$\frac{p}{p^2-\alpha^2}$, $p > 0$
t^n, $n \in \mathbb{N}$	$\frac{n!}{p^{n+1}}$, $p > 0$
t^r, $r > 0$	$\frac{\Gamma(r+1)}{p^{r+1}}$, $p > 0$
$\delta(t-\alpha)$	$e^{-\alpha p}$, $\alpha > 0$
$H(t-\alpha) = \begin{cases} 1 & t \geq \alpha \\ 0 & t < \alpha \end{cases}$	$\frac{e^{-\alpha p}}{p}$, $\alpha > 0$
$f * g = \int_0^t f(x)g(t-x)dx$	$F(p)G(p)$
$f(\alpha t)$	$\frac{1}{\alpha}F\left(\frac{p}{\alpha}\right)$, $\alpha > 0$
$t^n f(t)$	$(-1)^n F^{(n)}(p)$, $p > 0$
$f^{(n)}(t)$	$p^n F(p) - \sum_{k=1}^n p^{n-k} f^{(k-1)}(0)$, $p > 0$
f de periodo T	$\frac{\int_0^T f(t)e^{-pt}dt}{1-e^{-pT}}$
$e^{\alpha t} f(t)$	$F(p-\alpha)$
$f(t-\alpha)H(t-\alpha)$	$e^{-\alpha p}F(p)$

Función Gamma

$\Gamma(x) = \int_0^\infty t^{x-1}e^{-t}dt$
$\Gamma(x+1) = x\Gamma(x)$
Si $n \in N$, $\Gamma(n+1) = n!$, $\Gamma(0) = 1$, $\Gamma(1/2) = \sqrt{\pi}$

Variable Compleja

$z = x + yi$
$\overline{z} = x - yi$
$Re(z) = x$, $lm(z) = y$; $|z| = \sqrt{x^2 + y^2}$

$$arg(x + yi) = 2\pi k + \begin{cases} \arctan\left(\frac{y}{x}\right) & \text{si } x > 0 \\ \arctan\left(\frac{y}{x}\right) + \pi & \text{si } x < 0 \\ \operatorname{sgn}(y)\frac{\pi}{2} & \text{si } x = 0 \text{ e } y \neq 0 \end{cases}$$

$(rcis(\theta))^n = r^n cis(n\theta)$
$w^n = rcis(\theta) \Rightarrow w = \sqrt[n]{r}cis(\frac{\theta+2\pi k}{n}), k = 0, 1, \ldots, (n-1)$
$e^z = e^x(\cos(y) + i\operatorname{sen}(y))$
$\log(z) = \ln|z| + iarg(z)$
$\operatorname{sen}(z) = \operatorname{sen}(x)\cosh(y) + i\cos(x)\operatorname{senh}(y) = \frac{\operatorname{senh}(iz)}{i}$
$\cos(z) = \cos(x)\cosh(y) - i\operatorname{sen}(x)\operatorname{senh}(y) = \cosh(iz)$
$a^b = e^{b\log(a)}$

Ecuaciones de Cauchy Riemman

$u_x = v_y$, $u_y = -v_x$

Fórmula de la integral de Cauchy

$\int_C \frac{f(z)}{z-z_0}dz = 2\pi i f(z_0)$, $z_0 \in Int(C)$
$\int_C \frac{f(z)}{(z-z_0)^{n+1}}dz = \frac{2\pi i}{n!}f^{(n)}(z_0)$, $z_0 \in Int(C)$

Residuo de f en un polo z_0 de orden n

$Res(f, z_0) = \frac{1}{(n-1)!}\lim_{z\to z_0}\frac{d^{n-1}}{dz^{n-1}}(f(z)(z-z_0)^n)$

Serie de Fourier

$f(x)$ definida en $\left[-\frac{L}{2}, \frac{L}{2}\right]$
$f(x) \approx a_0 + \sum_{n=1}^\infty \left(a_n\cos(\frac{2\pi}{L}nx) + b_n\operatorname{sen}\left(\frac{2\pi}{L}nx\right)\right)$
$a_0 = \frac{1}{L}\int_{-\frac{L}{2}}^{\frac{L}{2}} f(x)dx$;
$a_n = \frac{2}{L}\int_{-\frac{L}{2}}^{\frac{L}{2}} f(x)\cos(\frac{2\pi}{L}nx)$
$b_n = \frac{2}{L}\int_{-\frac{L}{2}}^{\frac{L}{2}} f(x)\operatorname{sen}\left(\frac{2\pi}{L}nx\right)dx$

Serie de Fourier en cosenos

$f(x)$ definida en $[0, L]$
$f(x) \approx a_0 + \sum_{n=1}^\infty \left(a_n\cos(\frac{\pi}{L}nx)\right)$
$a_0 = \frac{1}{L}\int_0^L f(x)dx$;
$a_n = \frac{2}{L}\int_0^L f(x)\cos(\frac{\pi}{L}nx)$

Serie de Fourier en senos

$f(x)$ definida en $[0, L]$
$f(x) \approx \sum_{n=1}^\infty b_n\operatorname{sen}\left(\frac{\pi}{L}nx\right)$
$b_n = \frac{2}{L}\int_0^L f(x)\operatorname{sen}\left(\frac{\pi}{L}nx\right)dx$

Forma compleja de Fourier

$f(x)$ definida en $[-L, L]$,
$f(x) = \sum_{n=-\infty}^{infty} c_n e^{(\frac{izn\pi}{L}x)}$;
$c_n = \frac{1}{L}\int_{-L/2}^{L/2} f(x)e^{2n\pi i/Lx}dx$

Transformada Z

x_n	$Z\{x_n\}$
x_k	$\sum_{k=0}^{\infty}\frac{x_k}{z^k}$
$\begin{cases} 1 & k = m \\ 0 & k \neq m \end{cases}$	$\frac{1}{z^m}$
C	$\frac{Cz}{z-1}$, $\lvert z\rvert > 1$
a^k	$\frac{z}{z-a}$, $\lvert z\rvert > \lvert a\rvert$
k	$\frac{z}{(z-1)^2}$, $\lvert z\rvert > 1$
ka^{k-1}	$\frac{z}{(z-a)^2}$, $\lvert z\rvert > \lvert a\rvert$
$\cos(\alpha k)$	$\frac{z(z-\cos(\alpha))}{z^2-2z\cos(\alpha)+1}$, $\lvert z\rvert > 1$
$\operatorname{sen}(\alpha k)$	$\frac{z\operatorname{sen}(\alpha)}{z^2-2z\cos(\alpha)+1}$, $\lvert z\rvert > 1$
x_{k+m}	$z^m Z\{x_k\} - \sum_{n=0}^{m-1} x_n z^{m-n}$