F_ω
??
$2F_\omega$
F_ω
??
?
$_{OR} =$
$\frac{Z}{2}\left(1-\frac{d}{D}\cos\alpha\right)(Outer Race Fault)$
$F_{IR} =$
$\frac{Z}{2}\left(1+\frac{d}{D}\cos\alpha\right)(Inner Race Fault)$
$F_{FTF} =$
$\frac{1}{2}\left(1-\frac{d}{D}\cos\alpha\right)(Cage Frequency, Inner Race Rotating)$
$F_{BS} =$
$\frac{D}{d}\left[1-\left(\frac{d}{D}\right)^2\cos^2\alpha\right](Ball Spin Frequency)$
f
$\times F_{OR}$
$BPFI =$
$f\times$
F_{IR}
$BSF =$
$f\times$
F_{BS}
$FTF =$
$f\times$
F_{FTF}
$\alpha:$
$Contact angle()$
??
?

$$f(x) = \frac{a_0}{2}+\sum_{n=1}^{\infty}\left(a_n\cos(n\pi\omega x)+b_n\sin(n\pi\omega x)\right),$$
(1)
$\omega =$
$\frac{\pi}{L}$

$$a_n = \frac{1}{L}\int_{-L}^{L} f(u)\cos(n\omega u)\,du$$
(2)

$$b_n = \frac{1}{L}\int_{-L}^{L} f(u)\sin(n\omega u)\,du$$
(3)
$_s eq needs to be expressed as a valid form within the whole x \in$
R

$$F(x) = \int_0^{\infty}\left[A(\omega)\cos(\omega x)+B(\omega)\sin(\omega x)\right]\,d\omega$$
(4)

$$A(\omega) = \frac{1}{\pi}\int_{-\infty}^{\infty} f(u)\cos(\omega u)\,du$$
(5)

$$B(\omega) = \frac{1}{\pi}\int_{-\infty}^{\infty} f(u)\sin(\omega u)\,du$$
(6)
$f(x)$
R
$f(x)$
$f'(x)$
$[-L,L]\subset$
R
$f(x)$
R

$$\int_{-\infty}^{\infty}|f(x)|\,dx<\infty.$$

$A(\omega)$
$B(\omega)$
ω
$A(\omega)$
$B(\omega)$
$\omega\in$
R
$_i nt tends to attain a real value for x, which ensues that F(x) is defined for every x \in$
R
$F(x)$