$$\int_0^\infty p_{n,k}(t)t^m \, dt = \frac{(k+m)(k-m-2)!}{k!(n-1)!}$$

$B_n(f(t);x)$
$C_h[0,\infty)$

$$B_n(f(t);x) = (n-1)\sum_{k=0}^{\infty} p_{n,k}(x) \int_0^\infty p_{n,k}(t) f\left(\frac{nt+\alpha}{n+\beta}\right) dt$$

$0 \leq \alpha \leq \beta$
$B_n(f(t);x)$
$B_n(f(t);x)$

${}_n((af+bg)(t);x) = (n-1)\sum_{k=0}^{\infty} p_{n,k}(x) \int_0^\infty p_{n,k}(t)(af+bg)\left(\frac{nt+\alpha}{n+\beta}\right) dt$
$= (n-1)\sum_{k=0}^{\infty} p_{n,k}(x) \left[a\int_0^\infty p_{n,k}(t) f\left(\frac{nt+\alpha}{n+\beta}\right) dt + b\int_0^\infty p_{n,k}(t) g\left(\frac{nt+\alpha}{n+\beta}\right) dt\right]$
$= a(n-1)\sum_{k=0}^{\infty} p_{n,k}(x) \left[\int_0^\infty p_{n,k}(t) f\left(\frac{nt+\alpha}{n+\beta}\right) dt\right] + b(n-1)\sum_{k=0}^{\infty} p_{n,k}(x) \left[\int_0^\infty p_{n,k}(t) g\left(\frac{nt+\alpha}{n+\beta}\right) dt\right]$
$= aB_n(f(t);x) + bB(g(t);x)$

$B_n(f(t);x)$
$B_n(f(t);x) \geq 0 \iff f(t) \geq 0$

$\Leftarrow$
$B_n(f(t);x) \geq 0$
$f(t) \geq 0$
$p_{n,k}(x) \geq 0$

$$\Rightarrow (n-1)\sum_{k=0}^{\infty} p_{n,k}(x) \int_0^\infty p_{n,k}(t) f\left(\frac{nt+\alpha}{n+\beta}\right) dt \geq 0$$

$$\Rightarrow \int_0^\infty p_{n,k}(t) f\left(\frac{nt+\alpha}{n+\beta}\right) dt \geq 0$$

$$\Rightarrow f(t) \geq 0$$

$\Rightarrow$
$f(t) \geq 0$
$B_n(f(t);x) \geq 0$

$$\Rightarrow f(t) \geq 0$$

$p_{n,k}(x) \geq 0$

$$\Rightarrow \int_0^\infty p_{n,k}(t) f\left(\frac{nt+\alpha}{n+\beta}\right) dt \geq 0$$

$$\Rightarrow (n-1)\sum_{k=0}^{\infty} p_{n,k}(x) \int_0^\infty p_{n,k}(t) f\left(\frac{nt+\alpha}{n+\beta}\right) dt \geq 0$$

$$\Rightarrow B_n(f(t);x) \geq 0$$