Fourier Cosine Transforms: General Formulas

No	***Original function***, $f(x)$	***Cosine transform***, $\check{f}_c(u) = \int_0^\infty f(x)\cos(ux)\,dx$
1	$af_1(x) + bf_2(x)$	$a\check{f}_{1c}(u) + b\check{f}_{2c}(u)$
2	$f(ax), \quad a > 0$	$\frac{1}{a}\check{f}_c\left(\frac{u}{a}\right)$
3	$x^{2n}f(x), \quad n = 1, 2, \ldots$	$(-1)^n \frac{d^{2n}}{du^{2n}}\check{f}_c(u)$
4	$x^{2n+1}f(ax), \quad n = 0, 1, \ldots$	$(-1)^n \frac{d^{2n+1}}{du^{2n+1}}\check{f}_s(u), \quad \check{f}_s(u) = \int_0^\infty f(x)\sin(xu)\,dx$
5	$f(ax)\cos(bx), \quad a, b > 0$	$\frac{1}{2a}\left[\check{f}_c\left(\frac{u+b}{a}\right) + \check{f}_c\left(\frac{u-b}{a}\right)\right]$

References

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