MONOTONICITY RESULTS FOR THE POLYGAMMA FUNCTIONS

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Abstract. In this paper, the monotonic results of the functions $x^c|\psi^{(n)}(x+\beta)|$ and $x\psi^{(n+1)}(x+\beta)/\psi^{(n)}(x+\beta)$ are established. Several by-products are obtained. Moreover, we prove that the function $\frac{d\psi^{(n)}(\ln x)}{dx}$ is completely monotonic.


Key words and phrases: digamma function, polygamma functions, Laplace transforms, completely monotonic.

REFERENCES