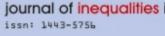
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Abstract:

## Approximation of $\pi(x)$ by $\Re(x)$

**RGMIA** 

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In this paper we find some lower and upper bounds of the form  $\frac{n}{H_n-c}$  for the

function  $\pi(n)$ , in which  $H_n = \sum_{k=1}^n rac{1}{k}$ . Then, we consider

 $H(x)=\Psi(x+1)+\gamma$  as generalization of  $H_n$  , such that

 $\Psi(x) = \frac{d}{dx} \log \Gamma(x)$  and  $\gamma$  is Euler constant; this extension has been

introduced for the first time by J. Sándor and it helps us to find some lower and upper bounds of the form  $\frac{x}{\Psi(x)-c}$  for the function  $\pi(x)$  and using these

bounds, we show that  $\Psi(p_n) \sim \log n$ , when  $n \to \infty$  is equivalent with

the Prime Number Theorem.

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