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Thus by page 332 of [8], $I = -\log\frac{1}{2} + \psi\left(\frac{3}{8}\right)$, and by (7.8) we get

THEOREM 7.10. *In the notation of (4.1), (4.2)*

$$\pi \lim_{T\to\infty} \sum_{\substack{p \\ |\mathrm{Im}\, p| < T}} \frac{np}{\cos\frac{\pi p}{2} + \sin\frac{\pi p}{2}}$$

$$= -2\sqrt{2}\sum_{n=1}^{\infty} \frac{\Lambda(n)}{\sqrt{n}} \frac{n}{n^2+1} - \frac{\log\pi}{\sqrt{2}} + 2\pi + \frac{1}{\sqrt{2}}[\log 2 + \psi(3/8)] .$$

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