

**PROPOSED PROBLEM TO APPLICABLE ANALYSIS AND DISCRETE
MATHEMATICS
A RAMANUJAN-LIKE-FORMULA**

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Let m and n be natural numbers such that $n \geq m + 2$, and let α and β be positive real numbers. Prove that

$$\alpha^{\frac{m+1}{n}} \left(\frac{2}{\pi}\right)^{\frac{m+1}{n}-1} \int_0^{\infty} \frac{x^m}{\cosh \alpha x^n} dx = \beta^{1-\frac{m+1}{n}} \Gamma\left(\frac{m+1}{n}\right) \cos \frac{(m+1)\pi}{2n} \int_0^{\infty} \frac{x^{n-m-2}}{\cosh \beta x^n} dx,$$

where Γ is the *Gamma function*.

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