Problem 6 (due Monday, April 28 )

Prove that if $a,b,c$ are positive numbers such that $abc=1$ then

\[
\frac{1}{\sqrt{1+2024a}}+\frac{1}{\sqrt{1+2024b}}+\frac{1}{\sqrt{1+2024c}}\geq\frac{1}{15}.\]

We received a solution from Emily (Qingyue) Liu, Josiah Moltz, and Andrew Zhou (a high school senior from Cincinnati, OH). Andrew's solution is based on a certain general result in elementary inequalities called the N-1 Equal Value Principle. The solution from Josiah Moltz is perhaps the simplest of all the solutions we have. For details and other solutions see the following link Solution.

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