

Answer on Question #78461 – Math – Calculus

Question

Write an odd natural number as a sum of two integers m_1 and m_2 in a way that m_1m_2 is maximum.

Solution

Let $n = m_1 + m_2$, so $m_2 = n - m_1$.

Thus, $P = m_1m_2 = m_1(n - m_1)$.

$$\frac{dP}{dm_1} = 0 \rightarrow n - 2m_1 = 0 \rightarrow m_1 = \frac{n}{2}.$$

But since n is odd, $\frac{n}{2}$ is not integer.

Therefore, we must choose $m_1 = \frac{n+1}{2}$, so $m_2 = n - \frac{n+1}{2} = \frac{n-1}{2}$.

Answer: $m_1 = \frac{n+1}{2}$, $m_2 = \frac{n-1}{2}$.