Question

The roots of the equation $2x^2-mx+n=0$ sum to 6 and multiply to 10. What is the value of m+n?

Original Thinking + Responses

Deepseek-R1-Distilled-Qwen-7B



Okay, so I have this equation here: $(2x^2 - mx + n = 0)$. They told me that the sum of the roots is 6 and the product is 10. Hmm, I need to find (m + n). Alright, let's see how to approach this. First off, I remember something called Vieta's formulas from algebra class. If it's been a while since you studied quadratics, Vieta's relates the coefficients of the polynomial to the sums and products of its roots. For a general quadratic equation $(ax^2 + bx + c = 0)$, the sum of the roots $((r_1 + bx)^2 + bx + c = 0)$ r_2)) is \(-b/a\) and the product is \(c/a\). So applying that to my equation, which is $(2x^2 - mx + n = 0)$, right? Let me identify the coefficients: - (a = 2) - (b = -m) - (c = n). Therefore, according to Vieta's formulas: Sum of roots = (-b/a = -(-m)/2 = m/2). Product of roots = (c/a = n/2)But wait, in the problem statement, they say the sum of the roots is 6 and the product is 10. So that gives us two equations: 1) Sum: (m/2 = 6)2)2) Product: $\langle (n/2 = 10 \rangle)$ the value is \(\boxed{32}\).

More than 600 tokens 😂



Hawkeye: Instruction Reasoning Process

Hawkeye Thinking

Deepseek-R1-Distilled-Qwen-7B-Hawkeye (LLM)



The quadratic equation $(2x^2 - mx + n = 0)$ has roots that sum to $(\frac{m}{2})$ and multiply to $(\frac{n}{2})$. Given that these sums and products equal (6) and (10), respectively: $[\frac{m}{2} = 6 \quad Right]$ arrow \quad m = 12\] \[\frac{n}{2} = 10 \quad \Rightarrow \quad n = 20\] Adding these values together gives: [m + n = 32], $[boxed{32}]$

Only 72 tokens [©]



Hawkeye Expansion

Owen 0.5B (SLM)



The given solution correctly identifies the values of $\mbox{(m\)}$ and $\mbox{(n\)}$ from the equations derived from the properties of the roots of a quadratic equation. Specifically, it uses the relationships between the coefficients of the quadratic equation and its roots.

To find the value of $\mbox{(m + n):} - \mbox{We know the sum of the roots (\((m/2 \)) is 6.}$ - We also know the product of the roots ((n/2)) is 10. From these relationships: $\[\frac{m}{2} = 6 \] \[\frac{n}{2} = 10 \] .$ Solving for $\(m\)$ and $\(n\)$ individually: $\[m = 6 \] \[n = 10\]$ \times $2 = 20 \]$. Finally, adding these values together: \[m + n = $12 + 20 = 10 \]$

Let's verify:

32 \] Therefore, the final answer is $(32\)$.

Based on the reasoning provided: 1. The roots of the quadratic equation $(2x^2)$ - mx + n = 0\) are given by the sum and product of the roots: \[$x_1 + x_2 = 0$ \] . 2. We know from the problem statement that: \[$x_1 + x_2 = 6$ \implies Also, since $(x_1 \cdot x_2 = 10)$: $frac{m}{2} = 6 \times m = 12$ $[\frac{n}{2} = 10 \right]$ 3. Therefore, we have: [m + n = 12 + $20 = 32 \]$ So, the value of (m + n) is $(\langle 32 \rangle)$.

