

Casio 2025 Speedrun Contest problem series

Throughout this problem series, “**Ans**” refers to the answer from the previous problem.

1. Open the Calculate app and input the keystroke sequence shown in the official “Casio 2025 Speedrun Contest” graphic. What is the result?
2. In exact form, what is the square root of the cube of the reciprocal of **Ans**?
3. You should notice that **Ans** is now in the form $r\sqrt{q}$.
Use the Base-N app to convert r into base q .
4. Ignoring all leading zeroes, enter the digits of **Ans** into a 2×3 matrix, moving left-to-right then top-to-bottom. Multiply this by the matrix $\begin{bmatrix} 0 & 7 \\ 2 & 0 \\ 2 & 5 \end{bmatrix}$, and provide the result.
5. Let T = the two-digit number suggested by each row of **Ans**. Given that the lengths of adult women’s arms are normally distributed with mean 28.5 inches and standard deviation 1.37 inches, what is the probability that a randomly selected adult woman has an arm length less than T inches? (Round to the nearest whole percent.)
6. What are the values of $f(x) = 3x + \mathbf{Ans}$ for $x = -4, -2, 0, 1$, and 3 ?
7. Assume that the five values from **Ans** form a sample.
What is the standard deviation of that sample? (Round to the nearest tenth.)
8. How many distinct integers are solutions to $-2x^2 + 5x + \mathbf{Ans} \geq 0$?
9. Solve:
$$\begin{cases} 6x + (2\sqrt{3})y = 42 \\ (4\sqrt{15})x - (4\sqrt{\mathbf{Ans}})y = 0 \end{cases}$$
10. **Ans** can be written in the form $(a, a\sqrt{b})$ where a is a rational number and b is an integer. If the complex number $a + bi$ is written in polar form $(r\angle\theta$, where θ is in degrees), what is the value of θ ?