Problem of the Week

Problem E

Keeping it Small

Clara is learning to code, so she has written a program to help her practice what she has learned so far.

Clara’s program takes two real numbers as input, called $A$ and $B$. First, her program doubles $A$, squares the result, and then reduces this result by four times $A$. The result is called $C$. Then her program squares $B$, and then increases this result by six times $B$. The result is called $D$. Finally, her program outputs the sum of $C$ and $D$.

Determine the minimum possible output of Clara’s program, and the two input values that produce this output.