Problem 1: Zeb Rolling

Zeb rolls two, fair, six-sided dice. Calling the product of the two dice P and their sum S, he then solves the equation $x^2 + P = Sx$. He records both solutions, recording the root twice if it happens to be a double root. What is the expected value of all the solutions he finds?

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted.