BECA / Huson / 12.1 IB Math SL Name:

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**Challenge**: Vector and calculus puzzle



Figure **Are You A Master Safecracker?**

Edited by Oliver Roeder

https://fivethirtyeight.com/features/are-you-a-master-safecracker/

Hints:

This is an *optimization* problem. Define the distance as a function and then find its minimum. If the function is a quadratic, find the vertex. (more generally, find the zero of the function’s first derivative)

Define each point using a variable, and then use the Pythagorean formula to find the distance between them.

Since there are two variables, one for each point, you’ll take the derivative with respect to each variable. That will give you a system of two equations of two unknowns to solve.