Suppose that there is a "cop" and a "robber" in $\mathbb{R}^n$, where the cop can move along the two continuous vector fields F and G at a speed v, and the robber can move anywhere in the plane with a speed u.

Question. Is there a procedure for determining in general who has a winning strategy?

Related.

1. Is there a procedure that can put a bound on the amount of time it will take for the cop to catch the robber?
2. How does this generalize to a torus, Möbius strip, or cylinder?