Magnetic monopoles: experiment. [EXTRA CREDIT, 15 bonus points] One way to search for magnetic monpoles is by monitoring the current through a highly conductive (preferably superconducting) loop. Suppose a monopole with magnetic charge s passes through a perfectly conducting circular loop with self-inductance L. The monopole has a constant speed v, perpendicular to the plane of the loop. It approaches from very far away, and then recedes to infinity. Calculate the current I that flows around the loop as a result of the monopole's passage.

(Note: experiments of this type have been running for decades, and have produced a few candidate events, but there has been no unambiguous detection.)