Quantitative analysis of competition models

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We study the planar Lotka-Volterra differential system of competition between two competing species having a saddle in the first quadrant. We show that, under certain conditions on the parameters of the system, one of the separatrices of the saddle divides the first quadrant in two, and hence depending on the initial conditions one of the species will extinct because the ω-limits are attracting nodes on the axes. We study the probability of the species of surviving depending on the initial choice of the parameters, providing an index κ.