1. Let \( f(x) = \frac{2x^2}{9-x^2} \). Is \( f \) symmetric? Find the domain of \( f \), the \( x \) and \( y \) intercepts, the asymptotes, the intervals where \( f \) is increasing, decreasing, concave upwards, and concave downwards, respectively, the local extrema, the inflection points, and sketch the graph of \( f \).

2. Party. You are at the point \((0, 1)\), the bar is the interval \([0, 1]\) on the \(x\)-axis. Suddenly you see your neighbor who is standing at \((1, 2)\). You want to go to talk to him, but first go to the point \((p, 0)\) at the bar and grab a drink (i.e., go straight from \((0, 1)\) to \((p, 0)\) and then straight from \((p, 0)\) to \((1, 2)\)). Draw a picture of the scene and describe the travel distance as a function of \(p\). How long is the minimal (in case your neighbor is a good friend) and the maximal (in case your neighbor isn’t such a good friend) travel distance?