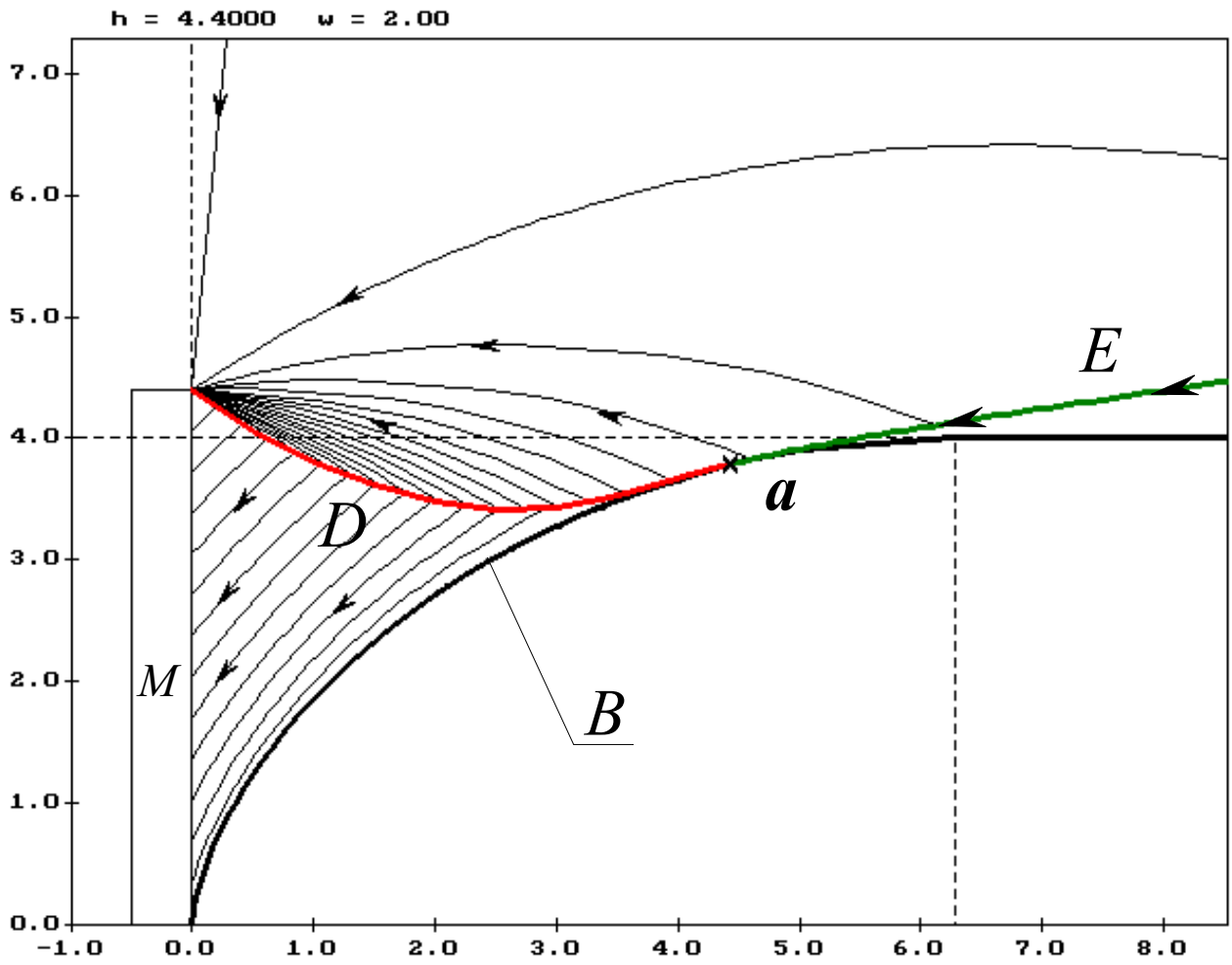
Solution for $h = 4.4,\ w = 2$



The singular line and the barrier have common tangent at the point $\boldsymbol{a}$