Magnetization versus Temperature in the Mean Field Approximation
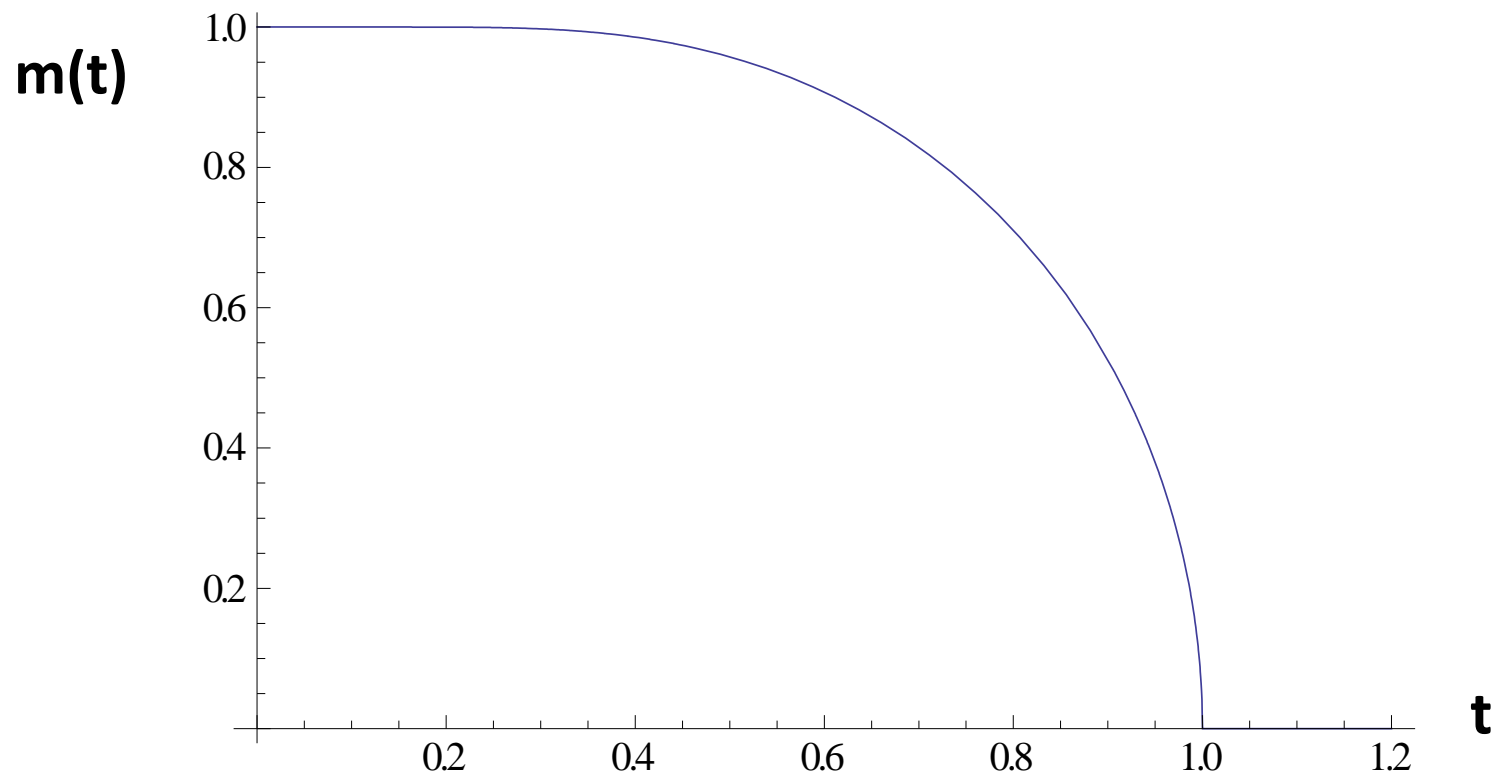
mag t_- := m /.FindRoot m = Tanh m / t , m, 1

mag 0.5

0.957504

Plot mag t , t, 0, 1.2

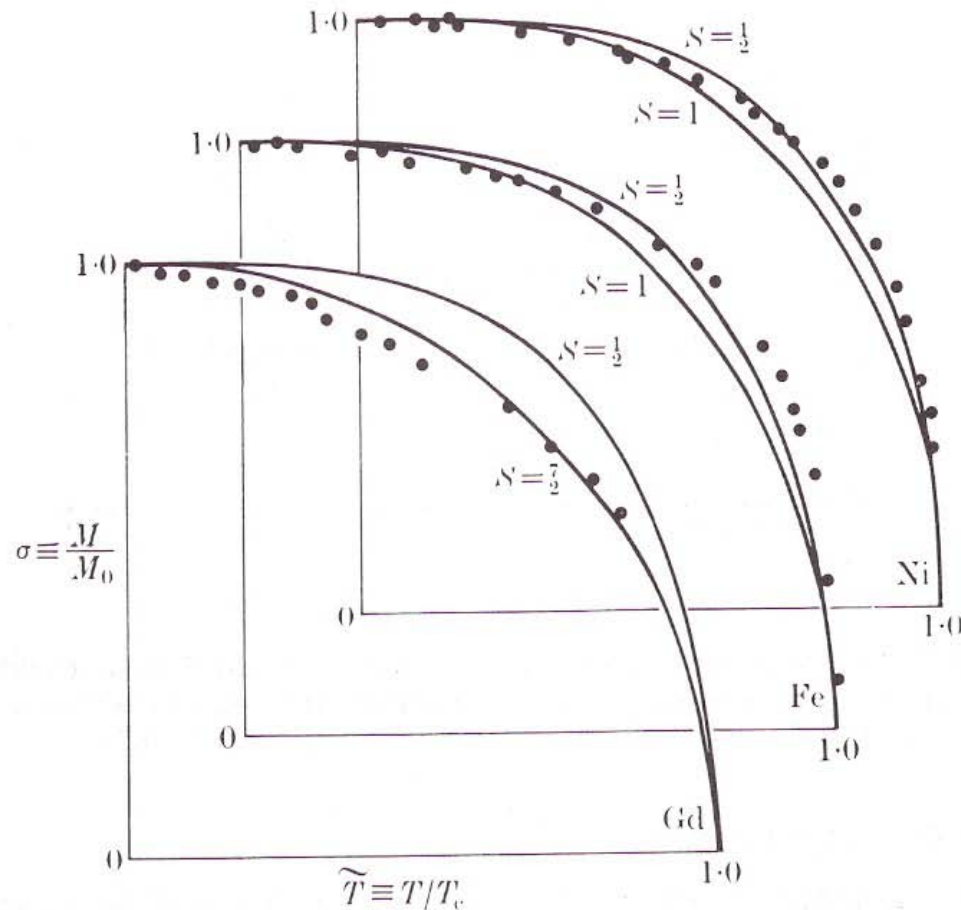# The Law of Corresponding States in Ferromagnetism

FIG. 6.5. Dependence of reduced magnetization $\sigma \equiv M/M_0 \equiv M(T, H)/M(0, 0)$ upon reduced temperature $\tilde{T} \equiv T/T_c$. The fact that there is a slightly different curve for each value of the spin quantum number S means that this law of corresponding states is valid only for a given value of S. The solid circles represent typical experimental data for Gd ($S \simeq \frac{7}{2}$), Fe ($S \simeq 1$), and Ni ($S \simeq \frac{1}{2}$). After Martin (1967).