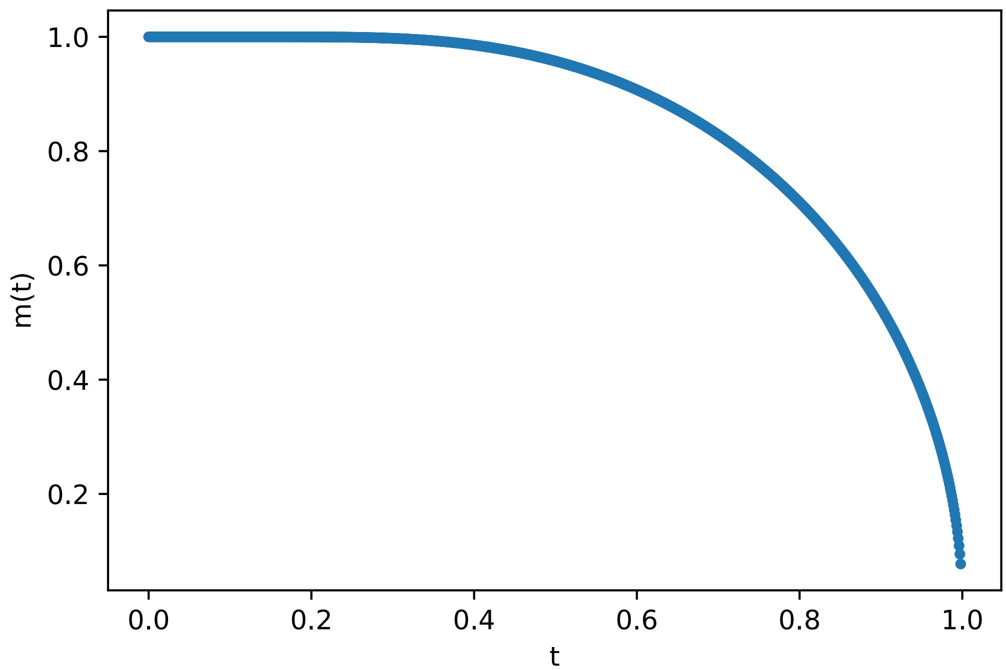
(2) for t = 0.5:

Root bisection method: t = 0.957504

Root Newton-Raphson method: t = 0.957504

(3) In this case, I the bisection method took less time, because the interval containing the root was well constrained. In general the Newton-Raphson method converges faster, but may not



converge to the root depending on the shape of the function. The bisection method will always converge to a solution, but may take a long time to do so.

(4)

Note: m(t) are the roots - i.e. the permitted magnetic field for a given t value.

As t increases, m(t) decreases to 0 at t = 1. This makes sense because at t = 1, the solid has reached the Curie temperature where the magnetic dipoles are randomly aligned, effectively mitigating any produced magnetic field.

(5) We find no solutions for m(t) other than the trivial solution where m(t) = 0 because the solid is above the Curie temperature. At this temperature, the dipoles will have no preferred alignment, or they will not be frozen into a specific preferred alignment. The number of particles The randomly oriented dipoles, will on average cancel each other out, leading to an overall permitted magnetic field = 0.