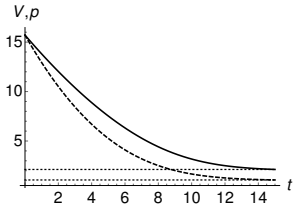
Problem 5, continued.

c. [4 points] What do you expect the long-term value for the volume $V(t)$ to be? Can you predict the long-term value for $p(t)$? If $k = 1$, which of the graphed functions to the right is $V(t)$ and which is $p(t)$? Why?



6. [10 points] Consider the initial value problem $(1 - y^3)\frac{dy}{dt} = 1$, $y(0) = 0$.

a. [5 points] Without solving it, will this initial value problem have a unique solution?

b. [5 points] Solve the problem. Based on your solution, for what range of t and y values would you expect the solution to exist? Why?