Solve the following two problems, showing all your work. Do not use theorems that haven't been covered in this class yet.

(1) A cube increases in size so that the edge length of the cube increases at a constant rate of 7 mm/s (millimeters per second). How fast is the volume of the cube changing when the edge length is 40 mm?

(2) Determine the intervals where the following function is increasing and where it is decreasing:

$$f(x) = \frac{x+1}{x^2+1}$$