

7. [12 points] The rate of vertical growth $r(t)$ of a tree, in meters per **month**, is given by

$$r(t) = \frac{10}{(t+1)^{3/2}}.$$

Here, t is measured in **months** after the tree was planted. **When the tree was planted its height was 1 meter.**

- a. [4 points] Write an expression, possibly involving one or more integrals, for the height of the tree after exactly 1 **year** has passed since planting it. You do not need to evaluate your integral(s).
- b. [2 points] Let $h(t)$ be the height of the tree, in meters, t **months** after it was planted. Write an expression, possibly involving one or more integrals, for the function $h(t)$. You do not need to evaluate your integral(s).
- c. [6 points] Assuming the tree lives long enough, will the tree ever grow more than 20 meters tall? Justify your answer, and be sure to use proper notation.