

MATH*1200 – LAB #3: CALVIN REACHES HIS LIMIT

www.nathanieljohnston.com/math1200/lab3.pdf

Solution: www.nathanieljohnston.com/math1200/lab3_solution.pdf



Calvin is running away from an overly-excited Hobbes. Calvin's position at time T is given by $\sqrt{T+1}$ and Hobbes' position at time T is given by \sqrt{T} . Although Hobbes will never catch up to Calvin, as $T \rightarrow \infty$ Hobbes will get arbitrarily close to Calvin. Prove this.

That is, use the formal definition of a limit to prove that

$$\lim_{T \rightarrow \infty} |\sqrt{T+1} - \sqrt{T}| = 0.$$

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