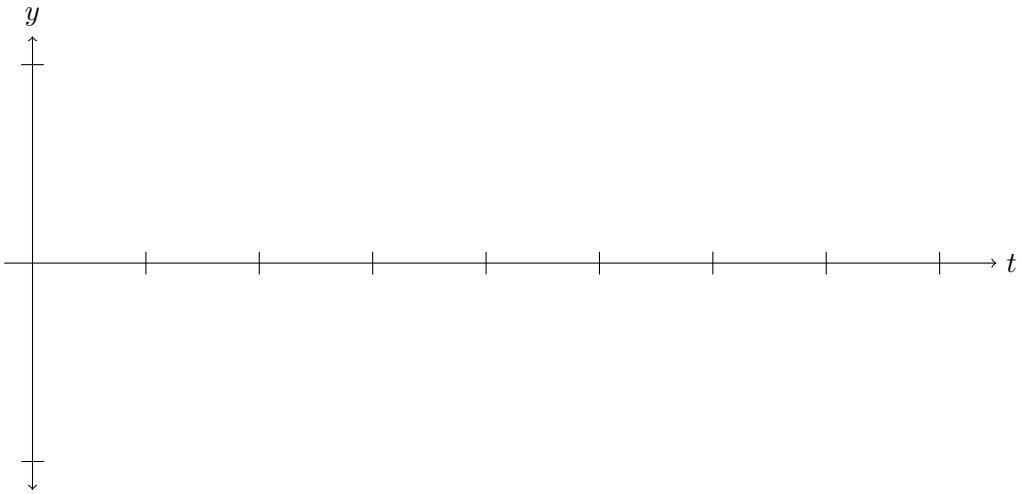
8. [11 points] In US households, electrical voltage (in volts) can be modeled by the function

$$V(t) = 155.6\sin(120\pi t)$$

where t is measured in seconds.

a. [4 points] On the axes below, sketch a graph of **two periods** of $y = V(t)$. Your second cycle should end at exactly the furthest right tick on the t-axis. Clearly label at least two ticks on the t-axis. Use the ticks on the y-axis for your maximum and minimum values of $V(t)$ and label them as well.



b. [4 points] Find the first three positive values of t where the voltage is equal to 120 volts. *Show all work. Leave your answers in exact form or round to at least four decimal places.*

$t =$ _____, _____, _____

c. [3 points] In Australia, the voltage alternates between a maximum of 240 volts, to a minimum of −240 volts, and back to 240 volts 50 times per second. Find a formula for the function $A(t)$ which models the voltage in Australia t seconds from when the voltage is at its **maximum**.

$A(t) =$ _____