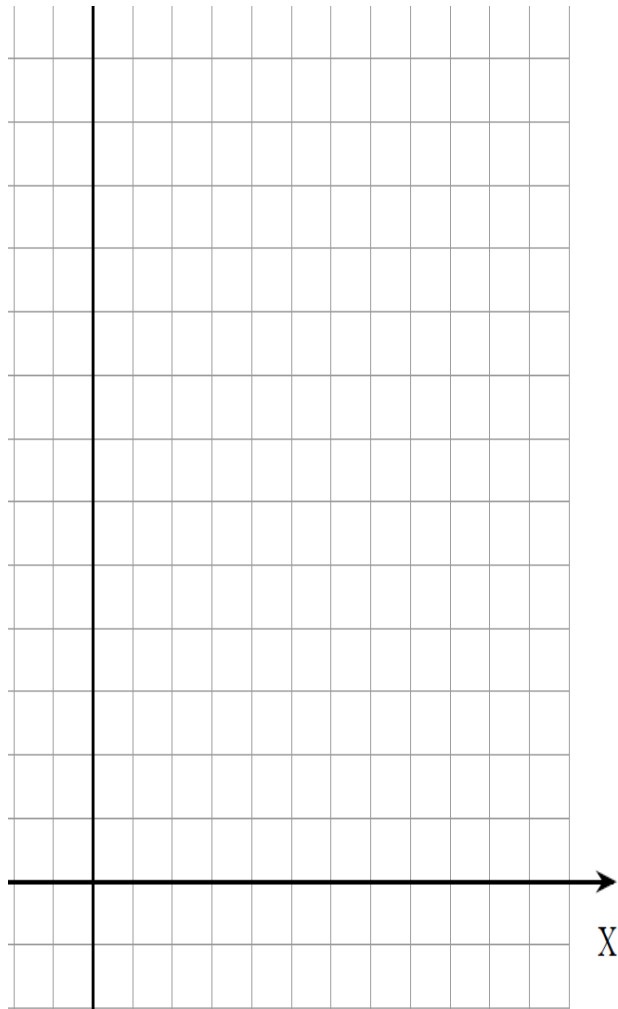


Suppose a compressed air cannon fires a pumpkin straight up into the air from a height of 18 feet and provides an initial upward velocity of 105 feet per second. What function rule would combine these conditions and the effect of gravity to give a relation between the pumpkin's height h in feet and its flight time t in seconds?

Suppose that you were able to use a ranging tool that records the height of a flying pumpkin every half second from the time it left a cannon. A sample of the data for one pumpkin launch appears in the following table. Plot the data on a graph and experiment with several values of v_0 and h_0 in search of a function that models the data pattern well.



Time (in seconds)	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0
Height (in feet)	12	38	57	67	69	63	49	28	0

Use a calculator that offers quadratic curve-fitting to find a quadratic model for the sample data pattern. Compare that automatic curve-fit to what you found with your own experimentation.