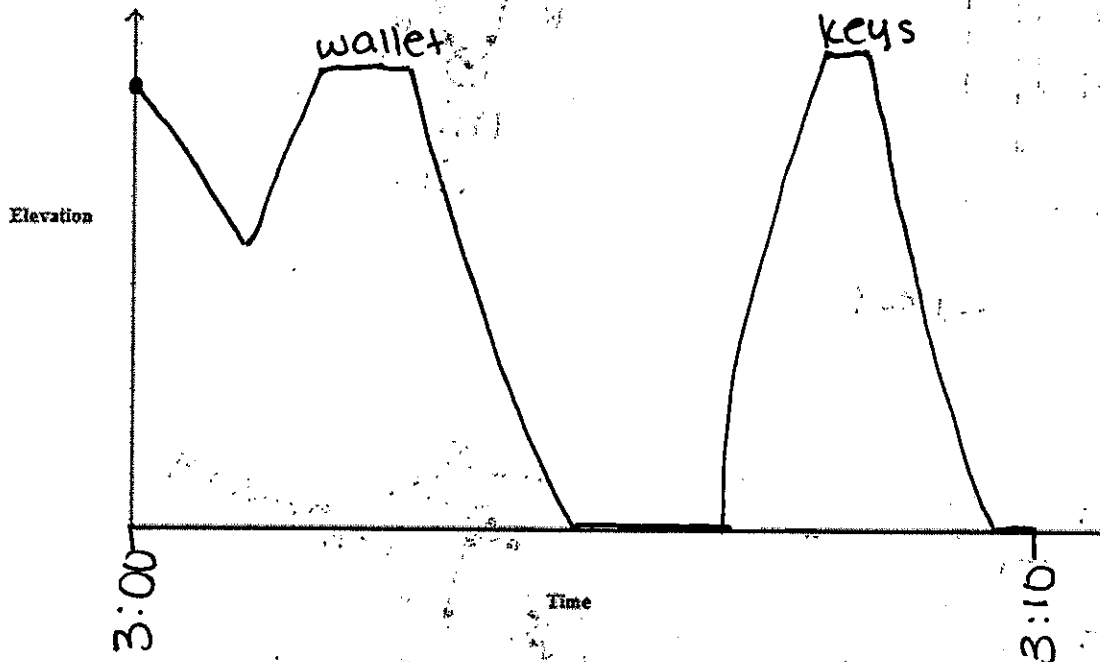**Do Now:** Darryl lives on the third floor of his apartment building. His bike is locked up outside on the ground floor. At 3:00 p.m., he leaves to go run errands, but as he is walking down the stairs, he realizes he forgot his wallet. He goes back up the stairs to get it and then leaves again. As he tries to unlock his bike, he realizes that he forgot his keys. One last time, he goes back up the stairs to get his keys. He then unlocks his bike, and he is on his way at 3:10 p.m.
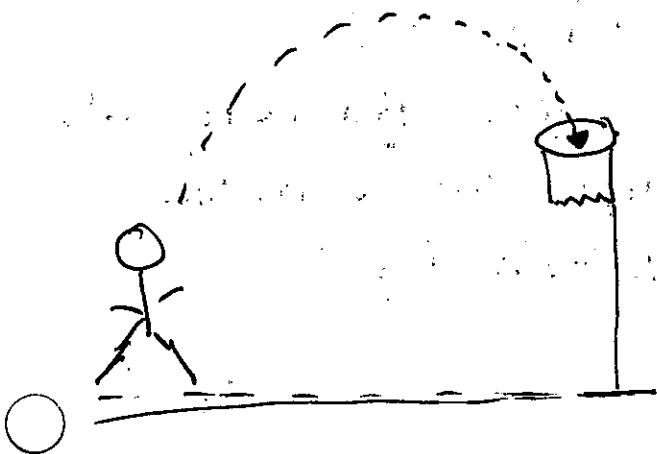
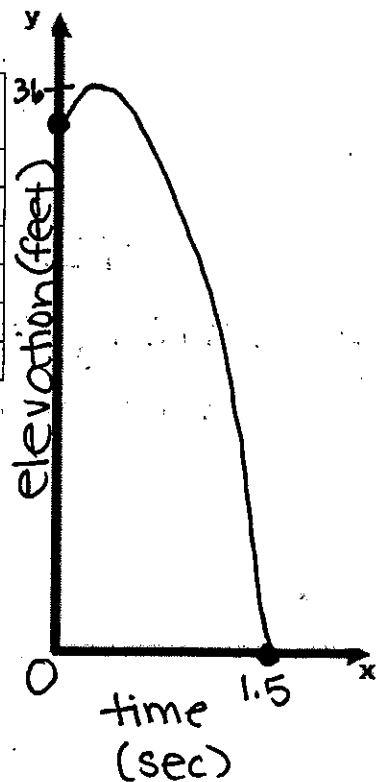Sketch a graph that depicts Darryl's change in elevation over time.

AIM: REAL-LIFE QUADRATICS VS EXPONENTIAL FUNCTIONS

1. Which basketball will go in the hoop? **(7 shots)** Sketch the path of the basketball.
   http://www.101qs.com/1195-will-it-hit-the-hoop

2. Man Jumping in Shallow Pool: Complete the table below and graph the function.
   https://www.youtube.com/watch?v=ZCFBC8aXz-g

Shots 1, 3, 5, 7 make it. →

air ball? 4

Time (sec)	Elevation (ft)
0	35.5
.25	36
.75	30
1	24
1.25	15
1.5	0

4. I am going to give you money this month for being such a good student. You have two choices.

Choice 1: I will give you $100,000 right now.

○ **Choice 2:** I will give you 1 penny on the first day of the month, then, double that amount every day. Whatever the amount is on day 31, you will get that amount.

.01, .02, .04, .08,

a) Which choice will you make? _2_ $y = a_1 r^{n-1}$

$$y = .01(2)^{30} = 10,737,418.24$$

b) The situation above is a representation of which function? _exponential growth_.

SKIP

5. Watch https://www.youtube.com/watch?v=MsHCqrrU-Gk.

The movie is a representation of which function? _exponential growth_.

6. Below is a table of values for bacteria doubling every second. Graph this data.
https://www.youtube.com/watch?v=gEwzDydciWc

Time (sec)	0	1	2	3	4	5	6	7
Number of bacteria	2	4	8	16	32	64	128	256

time (seconds)