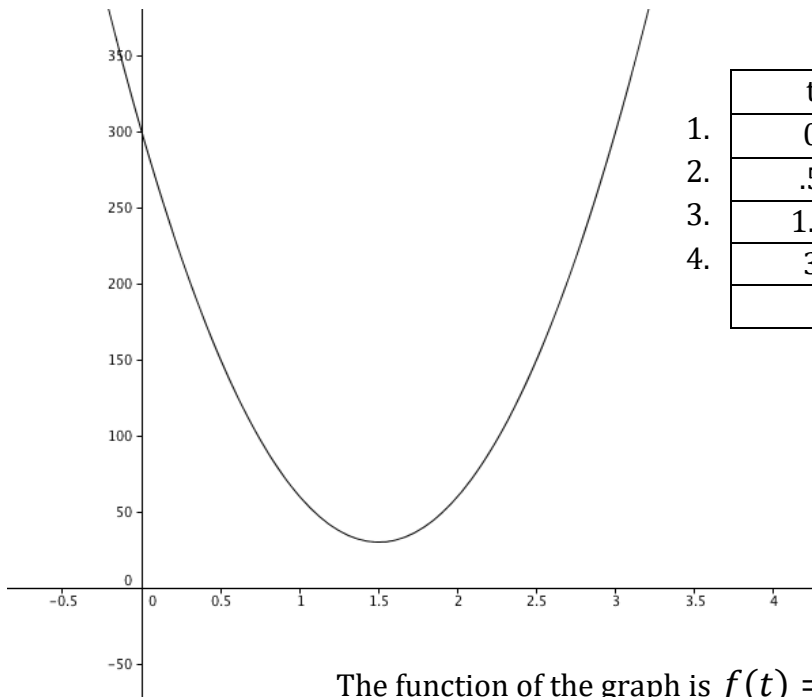


Average Rate of Change ws Bungee Breakdown

Name: _____ Hr: _____

The graph below models the height of a bungee jumper in feet over the time interval of three seconds $[0,3]$. The lowest the jumper gets is 30 ft. above the ground. Use values on the graph or use the equation for the function to fill out the table. Then using your table answer the questions below.



	t	f(t)
1.	0	
2.	.5	
3.	1.5	
4.	3	



The function of the graph is $f(t) = 120t^2 - 360t + 300$

5) a. Using the values in your table, find the average rate of change (ARC) of the given interval: $[0,1.5]$.

b. Interpret your answer.

6) a. Find an interval from where the person stops descent to where the bungee has no tension.

b. Interpret your answer

7) a. Find an interval that will produce an ARC of 0.

b. Why and when would this occur?

8) Find the average rate of change for the given equation $h(t) = -9t^2 + 45t + 3$ for a soccer ball using the following time intervals

a) $[1,2]$

b) $[2,4]$

c) $[4,6]$

9) a. Find the average rate of change over a time interval $[2,3]$ for the given equation $h(t) = -16t^2 + 96t + 10$ for a golf ball.

b. What is happening to the golf ball during this interval?

Use the tables below to answer questions 10-15.

Linear

Time (s)	Distance (ft)
0	0
1	3
2	6
3	9
4	12

Quadratic

Time (s)	Distance (ft)
0	0
1	3
2	12
3	27
4	48

Exponential

Time (s)	Distance (ft)
0	0
1	3
2	9
3	27
4	81

10. Is there a time interval when the rates of change are the same?

11. Which function has the greatest rate of change over the time interval from 2 seconds to 4 seconds?

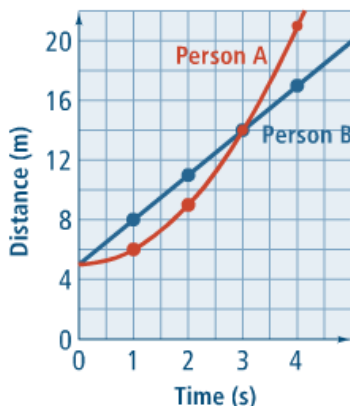
12. What observations can you make about the rate of change for the linear function over the time interval given?

13. What observations can you make about the rate of change for the quadratic function over the time interval given?

14. What observations can you make about the rate of change for the exponential function over the time interval given?

15. Which function has the greatest rate of change, and over what time interval?

16. Two people are running along parallel, straight tracks. The graph shows the distance each person has traveled.



a) At what times have the two runners traveled the same distance?

b) What is the average rate of change for the runners over the interval from 1 to 4 seconds, and who is traveling faster over that interval?