## 3.4 Average Rate of Change

Name: \_\_\_\_\_\_ Hour: \_\_\_\_\_

First estimate the average rate of change for each of the following graphs over the given interval and then find it exactly.







4. [0, 3]



6. [0, 1]



Suppose 25 flour beetles are left undisturbed in a warehouse bin. The beetle population doubles in size every week. The equation  $P(x) = 25 \cdot 2^x$  can be used to determine the number of beetles after x weeks. Complete the table.

- 7. Calculate the average growth rate between weeks 1 and 3.
- 8. Calculate the average growth rate for the first five weeks [0, 5].
- 9. Which average growth rate is higher? Why do you think it is higher?

Find the rate of change for the given functions and intervals			
10. $f(x) = x^2 + 4$ [2]	1,5]	11. $f(x) = -x^2 + 4$	[1,5]

12. 
$$f(x) = \frac{1}{2}x^2$$
 [-2,6]  
13.  $f(x) = 3x - 3$  [-3,3]

14. 
$$f(x) = 4x$$
 [-2,6] 15.  $f(x) = x^2 + 9$  [0,3]

16. Sketch the graph of a function that has a negative average rate of change from [0,3]



Week	Population
0	
1	
2	
3	
4	
5	