

8/29/19

**Questions from watching the video by Dr. Lucas on Average and Instantaneous rates of change.**

1. What pre-calculus concept was mentioned in the video?
2. What is the calculus phrase given that the pre-calculus concept in question 1) will help find?
3. Describe the approach to using the pre-calculus concept to get to the calculus result named in 2).
4. Write the difference quotient.
5. What is the notation given in the video for derivative?
6. Describe how the idea of limit was used. What was the result of using this idea?
7. What was the name of the geometric figure, whose slope represents the instantaneous rate of change?
8. If you work out the difference quotient for the function  $y=x^2$ , and let  $h = .001$ , what value do you get? What does this value mean?
9. What would happen if you worked the difference quotient out again, but let  $h=.0001$ ?
10. Work out the general formula for slope at any point using the difference quotient and the functions,  $f(x)= 2x^2+7$  and  $f(x)=x^3$
11. What short cut name was given to get the derivative function  $f'(x) = 2x$ ?
12. Name an application of finding instantaneous rate of change. Clearly state what your units are.