Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Sample Quiz Difference Quotient and ROC Hour\_\_\_\_\_

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| Use this function to answer the questions on this page.   1. Determine the slope of the secant line from x = 3 to x = 4   **SHOW DIFFERENCE QUOTIENT**   1. Write the equation of the secant line from x = 3 to x = 4   (CALCULUS DOES NOT USUALLY CARE ABOUT Y INTERCEPT, so use modified point slope format)   1. Determine the average rate of change (AROC) from x = 3 to x = 4   **SHOW DIFFERENCE QUOTIENT** | 1. Use x = 3.9999 and x = 4 to APPROXIMATE the instantaneous rate of at x = 4   **SHOW DIFFERENCE QUOTIENT**   1. Use x = 4.0001 and x = 4 to APPROXIMATE the instantaneous rate of at x = 4   **SHOW DIFFERENCE QUOTIENT**   1. What did #4 and #5 suggest as the APPROXIMATE slope of the tangent line? 2. Write the equation of APPROXIMATE tangent line at   x = 4 |

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|  | Use this graph and the given information below to answer the questions below.  A jogger’s distance whole on a run can be modeled by the function depicted on the given graph. f(x) gives the distance the jogger has ran in meters and x gives the number of seconds the jogger has been running for seconds |

1. Sketch the tangent line at x = 600 seconds. DO THIS ON GRAPH ITSELF!
2. Using the given graph and the related points give a rough estimate of the instantaneous rate of change at x = 600 seconds. Give a related difference quotient based on this rough estimate.
3. Give a related difference quotient of a better approximation for f(x) IF YOU KNEW the function for f(x)!
4. Suppose that you knew that this f(x) was, in fact, with x measured in seconds and f(x) measured in meters. Give a better estimate of the instantaneous rate of change at x = 600 seconds.

Give a related difference quotient based on this rough estimate.

The number of graduating seniors at a high schools can be modeled by G, where G(t) is the number of graduating seniors and t is the year since 2005 for

1. What does G(6) represent? (hint: a 4 digit year should be mentioned in the best explanation)
2. What does represent? Be specific!
3. What does represent? Be specific!

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| How do I get the difference quotient on TI Nspire? | Difference quotient  Note: this is the difference quotient  In previous classes, we called this SLOPE, in upper-level classes leading to CALCULUS, we use the fancier term, but it is all still about SLOPE or Rate of Change.  On the TI Nspire, it should be  Option 1:   1. Define your function on Graphs page.      1. Add a calculator page (Press CTRL i, or press DOC button and INSERT PAGE)   This is CTRL i path or CTRL DOC Button path This is DOC Button path     1. Press CTRL / button to insert a fraction      1. Press VAR button (faster method) or type f1() using keystrokes (slower method) directly to create difference quotient |

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| How do I get the difference quotient on TI Nspire?  A close-up of a calculator  Description automatically generated | Difference quotient  Note: this is the difference quotient  In previous classes, we called this SLOPE, in upper-level classes leading to CALCULUS, we use the fancier term, but it is all still about SLOPE or Rate of Change.  On the TI Nspire, it should be  Option 2:   1. Add a calculator page (Press CTRL i, or press DOC button and INSERT PAGE)   This is CTRL i path or CTRL DOC Button path This is DOC Button path  A screenshot of a calculator  Description automatically generated A screenshot of a computer  Description automatically generated   1. Define your function using := button (this is CTRL and the button immediately to the RIGHT of the 9 button (you know it worked if it says DONE) 2. Press CTRL / button to insert a fraction. 3. Press VAR button (faster method) or type f1() using keystrokes (slower method) directly to create difference quotient   A screenshot of a computer  Description automatically generated A screenshot of a computer  Description automatically generated |