**IM3H Module 8 Review**  Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
Limits and Derivatives

**1. Find the values of the limits using the graph at the right.**

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|  | **Macintosh HD:Users:administrator:Desktop:graph.gif** |
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**2. Describe the continuity of the graph at the following x-values.**

*If discontinuous, describe the condition of continuity that does not apply and if the discontinuity is removable or non-removable.*

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**3. Find the values of the following limits algebraically.**

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**4. Use the function to find the values of the following limits:**

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**5. Write the equation of the piece-wise function below. Then find the following limits.**

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**6. Find the derivative of each function. That is, find:** *(This equation will NOT be given on test.)*

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**7.Calculate the average rate of change between on the function, .**

**8. Calculate the instantaneous rate of change at on the function** .

**9. Given the graphs below, write the summation notation for the Riemann Sum shown.**

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| **Macintosh HD:Users:administrator:Desktop:image009.png** | **Macintosh HD:Users:administrator:Desktop:finnk194-1444-setIntegrals2_Riemann_Sumsprob3image1.png** |
| **Area=** | **Area=** |

**10. Sketch the derivative given function.**

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**11. Given the equation for , find the equation of the tangent line at x=9**

**12. At what x-values, does the function have a slope of -1/3.**

**13. Consider the function, for . Estimate using right-endpoint rectangles of width 0.75 unit. Follow the steps below as necessary to complete the problem:**

1. Sketch a graph showing the curve over the indicated domain. Draw in right-endpoint rectangles from the *x*-axis to the curve showing a width of 0.75 unit for each rectangle. The rectangles should be below the curve.

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| Macintosh HD:Users:administrator:Desktop:238614_MMH101_coord_grid_stem_01.png  e. What could you do to make the estimate of more accurate? | b. Find the height of each rectangle by using the -values of .  c. Write an expression for the sum of the areas of the rectangles.  d. Estimate . |

**14. Sketch the graph of f(x) given the following features.**

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| --- | --- |
| * is positive for all values of *x* on (, 2) * is negative if or . | * for all real numbers |
| Macintosh HD:Users:administrator:Desktop:238614_MMH101_coord_grid_stem_01.png | Macintosh HD:Users:administrator:Desktop:238614_MMH101_coord_grid_stem_01.png |