Worksheet #8 - Instantaneous Rate of Change

February 7, 2005

Please print your name(s) at the top of the page. Please answer in complete sentence.

Graph the following function on your calculator using the domain of $x \in [2, 11]$

$$y = \cos(-x^2/8) \cdot (x - 6)$$

- Determine the instantaneous rate of change of the function at $x = 4$ by using $\Delta x = 1, 0.1, 0.001$.

- Determine the instantaneous rate of change of the function at $x = 8.5$ by using $\Delta x = 2, 0.2, 0.002$.

- Investigate the "Draw-Tangent" feature on your calculator. Draw a tangent line on the graph at $x = 4$ and another at $x = 8.5$. How can this feature help you in answer the questions above?

- Using your eyes, find the approximate locations where the instantaneous rate of change is equal to zero? What are the terms we have used for these type of points? With respect to the shape of the function, how are they different?

- Name a function has the instantaneous rate of change always equal to 2? Plot this function. Using your eyes, find the approximate locations where the instantaneous rate of change is equal to 2?