**Day 47**

**Warm Up**

**Free Response #6 2011**

Let $f\left(x\right)=\left\{\begin{array}{c}1-\sin(x), \&x\leq 0\\e^{-4x}, \&x>0\end{array}\right.$

A. Show that f is continuous at x = 0.

B. Express f’(x) as a piecewise function of x. Find the value of x for which f’(x) = -3.

C. Find the instantaneous rate of change of the function at x = 5. Find the average rate of change of the function over the interval [1, 5]