Go to the website: Inner Products of Functions and play with the simulation for a few minutes. Then answer the following questions:

1. What do you do to MULTIPLY two functions pointwise? Graphically? Algebraically?
2. Compare the algebraic definition of the dot product

$$\vec{v} \cdot \vec{w} = v_1^* w_1 + v_2^* w_2 + \cdots = \sum_i v_i^* w_i$$

   and the algebraic definition of the inner product of two functions

$$\langle f|g\rangle \doteq \int_0^L f(x)^* g(x) dx$$

   How are these similar? How are they different?
3. How would you tell if two functions are orthogonal algebraically?
4. How would you tell if two functions are orthogonal graphically?