*Name*_____

Wave interference

For each of the cases (a)-(e) below:

1. Calculate $\Delta\Phi = \Phi_1 - \Phi_2$.

2. Use Graphing Calculator to "add" the two harmonic waves together. Make n the time variable. Set $0 \le n \le 1$, with 100 steps. Do the waves add constructively or destructively?

3. Match the experimental setups (I)-(V) with the cases (a)-(e).

4. What does switching the black/red wires do to Φ_1 and Φ_2?

5. What does placing the speakers in front/back of each other do to x_1 and x_2?

1. $\Delta\Phi = ?$	**2**. const.? dest.?	**3**. Set-up (I)-(V)?	Graph (A)-(E)?
(a) $\Phi_1 = 0$, $\Phi_2 = 0$; $x_1 = x$, $x_2 = x$.			
(b) $\Phi_1 = 0$, $\Phi_2 = \pi$; $x_1 = x$, $x_2 = x$.			
(c) $\Phi_1 = 0$, $\Phi_2 = 0$; $x_1 = x$, $x_2 = x + \lambda$.			
(d) $\Phi_1 = 0$, $\Phi_2 = 0$; $x_1 = x$, $x_2 = x + \dfrac{\lambda}{2}$.			
(e) $\Phi_1 = 0$, $\Phi_2 = \pi$; $x_1 = x + \dfrac{\lambda}{2}$, $x_2 = x$.			

Done early? Match the graphs (A)-(E) with the cases (a)-(e).

Name_____

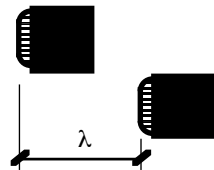## *Match these experimental set-ups below (I)-(V) below with the cases (a)-(e) from your exit handout.*

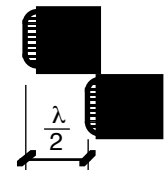I. Plug two speakers into the *same* wave function generator, wired the same way, standing face to face.

II. Plug two speakers into the *same* wave function generator, wired oppositely, standing face to face.

III. Plug two speakers into the *same* wave function generator, wired the same way, both facing you, but one speaker a full wavelength in front of the other.

IV. Plug two speakers into the *same* wave function generator, wired oppositely, both facing you, but one speaker a half wavelength in front of the other.

V. Plug two speakers into the *same* wave function generator, wired the same way, both facing you, but one speaker a half wavelength in front of the other.
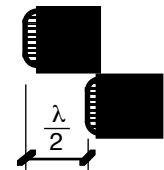
Match these graphs (A)-(E) below with the cases (a)-(e) from your exit handout and the speaker configurations (I)-(V).

A.

B.

C.

D.

E.