Questions (for thought, at least, but perhaps more) about regular, periodic waves generated in our wave tank:

(1) How does the structure (shape) of the surface of the water vary:
- **(a)** in the direction along the length of the tank
- **(b)** in the direction across the tank

(2) How does water temperature vary in the tank:
- **(a)** at fixed locations over time
- **(b)** from place to place at a fixed time

(3) How does water density vary:
- **(a)** at fixed locations over time
- **(b)** from place to place at a fixed time

(4) How important is friction in the tank? (What circumstance must apply in general for there to be friction in a fluid?)

(5) How does atmospheric pressure at the water surface vary:
- **(a)** at fixed locations over time
- **(b)** from place to place at a fixed time

[*Hint for **(a)***: Model the vertical variation of atmospheric pressure as hydrostatic. A typical density of air at sea level is around 1.2 kg/m^3.
*Hint for **(b)***: Significant horizontal variations in atmospheric pressure produce significant air motion (that is, wind).]

(6) How large is the vertical acceleration of water in the tank, relative to the force/mass of gravity?

[*Hint #1*: What is the vertical (component of) *velocity* of water at the peak and at the trough of a wave? What can you say about it in between the peak and trough?]

[*Hint #2*: Based on your observations, what analytic function might best describe (or model) the position $(x_p(t),z_p(t))$ of a bit (parcel) of water at the water surface vs. time?]