October 28, 2013

NAME

Fluids-ID

Quiz 9. Water is to be moved from one large reservoir to another a higher elevation as indicated in the Figure. The flow rate, *Q =2.5 ft³/s* and the head loss, $h_L = 61\frac{\bar{V}^2}{2g}$ where $\bar{V}$ is the average velocity. Determine the pump power required.

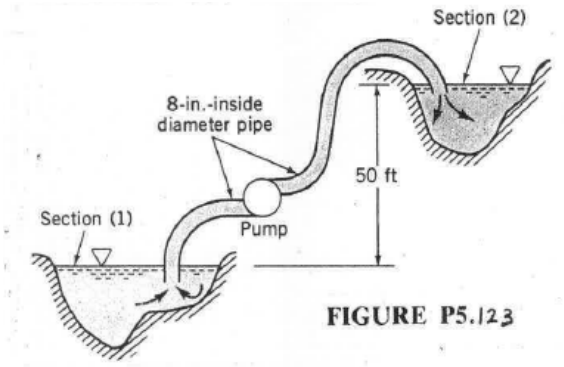

FIGURE P5.123

Hint.

1) density, $\rho = 1.94\ slugs/ft^3$
2) $\frac{p_1}{\gamma} + \frac{V_1^2}{2g} + z_1 + h_p = \frac{p_2}{\gamma} + \frac{V_2^2}{2g} + z_2 + h_t + h_L$
3) Pump power, $\dot{W}_p = Q\rho g h_p$

Note: Attendance (+2 points), format (+1 point)