

October 24, 2012

NAME

Fluids-ID

Quiz 9. When the pump in the figure draws $220 \text{ m}^3/\text{h}$ of water at 20°C from the reservoir, the total friction head loss is 5 m . The flow discharges through a nozzle to the atmosphere. Estimate the pump power in kW delivered to the water.

Hint.

- 1) gravity, $g = 9.81 \text{ m/s}^2$
- 2) density, $\rho = 998 \text{ kg/m}^3$
- 3) $\frac{p_1}{\rho g} + \frac{V_1^2}{2g} + z_1 + h_p = \frac{p_2}{\rho g} + \frac{V_2^2}{2g} + z_2 + h_L$
- 4) Pump power, $P = \rho g Q h_p$

