

9. The pump must work against the hydrostatic pressure exerted by the column of sewage (of density ρ and height $\ell = 8.2 \text{ m} - 2.1 \text{ m} = 6.1 \text{ m}$). The (minimum) pressure difference that must be maintained by the pump is $\Delta p = \rho g \ell = (900 \text{ kg/m}^3)(9.8 \text{ m/s}^2)(6.1 \text{ m}) = 5.4 \times 10^4 \text{ Pa}$.