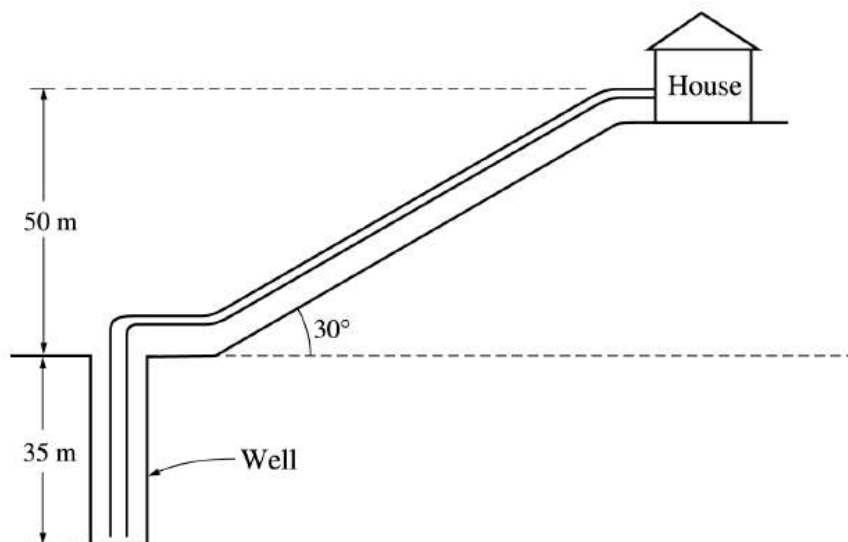


Fizzix HONORS - Greenwichstein High School

Worksheet Thingee

WS 12-2



(10 points)

A pump, submerged at the bottom of a well that is 35 m deep, is used to pump water uphill to a house that is 50 m above the top of the well, as shown above. The density of water is $1,000 \text{ kg/m}^3$. All pressures are gauge pressures. Neglect the effects of friction, turbulence, and viscosity.

- (a) Residents of the house use 0.35 m^3 of water per day. The day's pumping is completed in 2 hours during the day.
- Calculate the minimum work required to pump the water used per day
 - Calculate the minimum power rating of the pump.
- (b) The average pressure the pump actually produces is $9.20 \times 10^5 \text{ N/m}^2$. Within the well the water flows at 0.50 m/s and the pipe has a diameter of 3.0 cm . At the house the pipe diameter is 1.25 cm .
- Calculate the flow velocity when a faucet in the house is open.
 - Explain how you would calculate the minimum pressure at the faucet.

Mr. Taylor