37.56 A fluid with a specific gravity of 1.1 is pumped by a $150hp$ pump which generates $300ft$ of head. What is the increase in pressure observed at the pump outlet?

A. $130psi$

B. $143psi$

C. $3300psi$

D. $20,600psi$

Refer to the section under the Bernoulli Equation. The change in pressure is essentially the head added by the pump converted from ft to psi, and after adjusting for the specific weight of fluids other than water, as is the case in this problem.

$$\Delta p = \gamma h$$

Head added by the pump, h, is given. The specific weight is a function of the Specific Gravity. Solve for γ and substitute into the original equation.

$$SG = \frac{\gamma}{\gamma_w}$$

$$\gamma = SG \cdot \gamma_w$$

$$\Delta p = SG \cdot \gamma_w h$$

Evaluate the increase in pressure, Δp, and coonvert units to psi.

$$\Delta p = (1.1)\left(62.4\frac{lb_f}{ft^3}\right)(300ft)\left(\frac{1ft^2}{144in^2}\right) = 143psi$$

Answer B