Hw 1.4

sexta-feira, 20 de setembro de 2024 10:41

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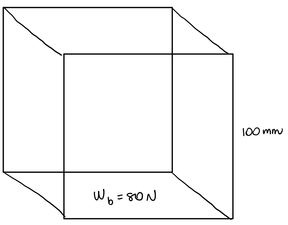
5.8



$\Sigma F V = 0$

$F_B + F_F - W_B - W_F = 0$

$F_B = \gamma V$

$W = \gamma V$

$F_B = \gamma_f V = 9790\ N/m^3 \cdot 100\ mm^3 \left(\frac{1\ m^3}{1000000000\ mm^3}\right) = 9.79\ N$

$9.79 + \gamma_f V_f - 80\ N - \gamma_F \forall_F$

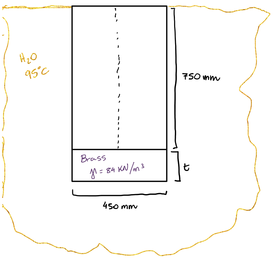
$9.79N + \gamma_F V_F - 80N - \gamma_F V_F = 0$

$\gamma_f V_F - \gamma_F V_F = 80\ N - 9.79 = 70.21N$

$V_F (\gamma_f - \gamma_F) = 70.21N$

$V_F = \frac{70.21}{(9790-470)} = 0.0075\ m^3$

5.24



$\Sigma F = 0$

$F_b - W_c - W_B = 0$

$V_B = \left(\frac{\pi (0.45)^2}{4}\right)(t) = 0.159t\ m^3$

$V_c = \left(\frac{\pi (0.45)^2}{4}\right)(0.75) = 0.1193\ m^3$

$V = V_c + V_B = 0.1193 + 0.159t$

$\gamma_w V = \gamma_c V_c + \gamma_B V_B$

$(9.44)(0.1193 + 0.159t) = (6.456)(0.1193) + (84)(0.159t)$

$1.13\ KN + 1.501t\ KN = 0.77\ KN + 13.356t\ KN$

$13.356t - 1.501t = 1.13 - 0.77$

$11.855t = 0.36$

$t = 0.36/11.855$

$t = 0.0304\ m$