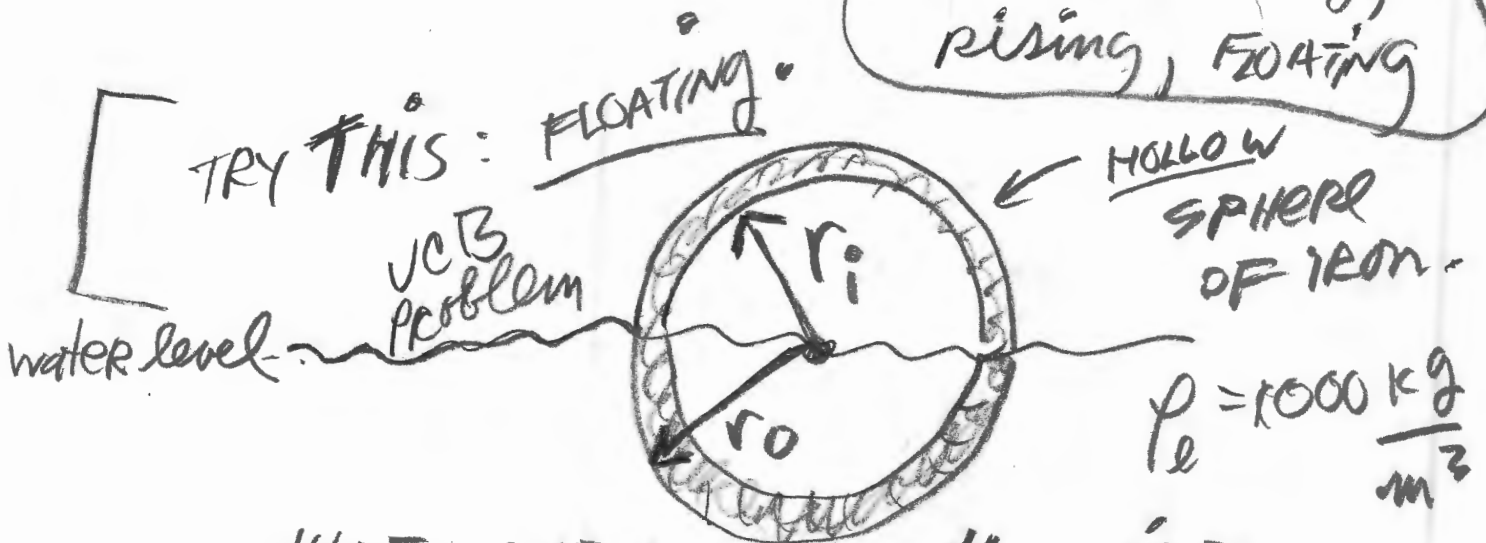


9-13-13 test 1 Review sheet (1)

CH date problem
12 → 8-19 → # 9; CH 12

12 → 8-19 → 3 cases: SINKING, RISING, FLOATING



HALF-SUBMERGED HOLLOW IRON SPHERE. Given $r_i = 0.5 \text{ m}$,

FIND r_o . $\rho_{\text{Fe}} = 7,870 \frac{\text{kg}}{\text{m}^3}$

2 solution methods

(A) USING AVERAGE density of sphere

$$\rho_{\text{AV}} = \frac{\text{mass}}{\text{OUTER VOLUME}} = \frac{\rho_{\text{Fe}} \cdot \frac{4}{3}\pi (r_o^3 - r_i^3)}{\frac{4}{3}\pi r_o^3} < \rho_{\text{Fe}}$$

(A)

use

$$\frac{\rho_{AV}}{\rho_w} = \frac{V_s}{V_{OUTER}}$$

(2)
displaced water volume

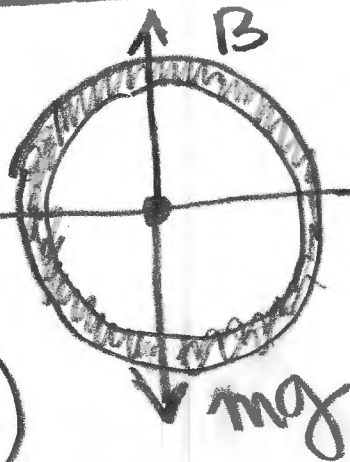
$$\left[\rho_{Fe} \frac{4}{3} \pi (r_o^3 - r_i^3) \right] / \left[\frac{4}{3} \pi r_o^3 \right] = \frac{\frac{1}{2} \frac{4}{3} \pi r_o^3}{\frac{4}{3} \pi r_o^3}$$

1000 kg/m³

THIS WILL GIVE SAME RESULT AS (B) BELOW:

(B)

water level



$$B = \rho_w \cdot V_s \cdot g = mg$$

$$\frac{1000 \cdot \frac{4}{3} \pi r_o^3 \cdot g}{2} = \rho_{Fe} \cdot \frac{4}{3} \pi (r_o^3 - r_i^3) \cdot g$$

$$= \rho_{Fe} \cdot \frac{4}{3} \pi (r_o^3 - r_i^3) \cdot g$$

$$500 \cdot r_o^3$$

$$= \rho_{Fe} \cdot (r_o^3 - r_i^3)$$

$$500 \cdot r_o^3$$

$$= \rho_{Fe} \cdot r_o^3 - \rho_{Fe} \cdot r_i^3$$

$$\rho_{Fe} \cdot r_i^3$$

$$\rightarrow r_o^3 = \frac{\rho_{Fe} \cdot r_i^3}{(\rho_{Fe} - 500)}$$

method (B)

$$r_0 = \sqrt[3]{\frac{p_{Fe}}{(p_{Fe} - 500)}} \cdot r_i$$

(3)

CH → Date → Problem
17 → 8-21 → given $x(t)$ and $v_x(t)$, FIND A, ϕ .
 $x = A \cos(\omega t + \phi)$
 $\omega = \sqrt{\frac{E}{m}}$

12 → 8-21 → #26, CH12

12 → 8-23 → Blood is circulation
example ...

12 → 8-23 → #21, 25, 27

* COPY FORMULAS IN LECTURES
CH DATE PROBLEM

15 → 8-26 → COPY FORMULAS *

15 → 8-28 → $f_n = \frac{nv}{2L}$; $n = 1, 2, 3, \dots$
string, 2
fixed ends
(standing waves)

ALSO, pre-lecture problem.

16 → 8-30 → Example
16.4 speed of SOUND

12, 15 → 9-6 → LABWRITE
VPS

15 → 9-9 → #48, CH15

17 → 9-11 → NOT ON TEST 1

CH 16 on Test 1 is EXTRA credit. (5)
(E.C.)

CH 16 is E.C. Based on

any problem assigned

on Mastering PHYSICS.COM

Test 1 = CH 12, 14, 15

and for E.C.,

CH. 16