

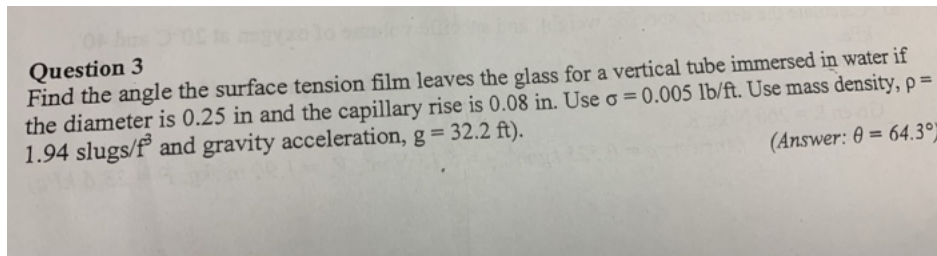
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## Question: Question 3 Find the angle the surface tension film leaves the ...

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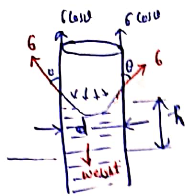
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## Expert Answer



ROUSHAN answered this  
957 answers

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at equilibrium.

Surface tension force = weight of water.

$$4\sigma \cos\theta = \rho g d^2 h$$

$$\therefore h = \frac{4\sigma \cos\theta}{\rho g d} \quad \text{--- (1)}$$

data given in question is —

$$\text{diameter } (d) = 0.25 \text{ in} = \frac{0.25}{12} \text{ ft} \quad (1 \text{ ft} = 12 \text{ inch})$$

$$h = 0.08 \text{ in} = \frac{0.08}{12} \text{ ft.}$$

$$\sigma = 0.005 \text{ lb/ft}$$

$$\rho = 1.94 \text{ slugs/ft}^3$$

$$g = 32.2 \text{ ft/s}^2$$

put all value in equation (1)

$$h = \frac{4\sigma \cos\theta}{\rho g d}$$

$$\therefore \cos\theta = \frac{\rho g d h}{4\sigma} = \frac{(1.94) \times (32.2) \left(\frac{0.25}{12}\right) \left(\frac{0.08}{12}\right)}{(4 \times 0.005)}$$

$$\cos\theta = 0.4338$$

$$\theta = \cos^{-1}(0.4338) = 64.3^\circ$$

Hence, angle of contact is  $64.3^\circ$  Ans.

an upvote would be appreciated.

Thank You.

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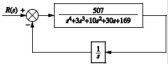
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**Problem 2.** Using the Routh-Hurwitz criterion, tell how many closed-loop poles of the transfer function shown in the below figure lie in the left half-plane, in the right half-plane, and on the imaginary axis.



[See answer](#)

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A: [See step-by-step answer](#) 100% (2 ratings)

Q: 2 Find the angle the surface tension film leaves the glass for a vertical tube immersed in water if the diameter is 0.25 inch and the capillary rise is 0.08 inch. Use surface tension = 0.005 lb/ft. A force of 460 N is exerted on lever AB as shown in

A: [See answer](#)

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