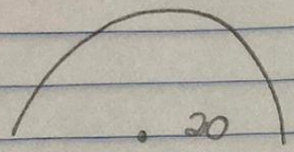
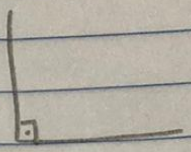
Cones e Esferas

1-) Semicírculo de raio 20cm
Qual a distância do bico do chapéu a mesa?

R = 20 do semicírculo





$\frac{\pi(20)^2}{2} = r = 10$

$20^2 = 10^2 + h^2 \rightarrow h = 10\sqrt{3}$ (A)

$400 = 100 + h$

2-) altura de um cone circular reto é 12cm e seu volume é $64\pi\ cm^3$

raio

$64\pi = \frac{\pi \cdot r^2 \cdot 12}{3}$

$192\pi = 12\pi \cdot r^2$

$\frac{192}{12} = \sqrt{16} = 4$ raio da base

$\Rightarrow g^2 = 4^2 + 12^2$

$g^2 = 16 + 144$

$\Rightarrow \sqrt{160} = 4\sqrt{10}$

3-) o raio da base tem a mesma medida da altura e área da base é $36\pi\ cm^2$

$A_{box} = \pi r^2 - 36\pi = \pi r \rightarrow r = 6 = h$

$V = \frac{1}{3}\pi r^2 \cdot h$

$V = \frac{\pi\ 6^2 \cdot 6}{3} \rightarrow V = 36 \cdot 2\pi = 72\pi$ A

4- hipotenusa mede 2cm

$r = h = 1$

$V = 2 \cdot V_c$

$V = 2 \cdot \left(\frac{1}{3} \pi r^2 \cdot h\right) = \frac{2\pi}{3}$

E

5- Cilindro reto de raio 3 e altura

$\pi r^2 \cdot h = \pi \cdot 3^2 \cdot 10 = 90\pi$

$V_c = \frac{1}{3} \pi r^2 \cdot h = \frac{1}{3} \cdot \pi \cdot 1^2 \cdot 3 = 1\pi$

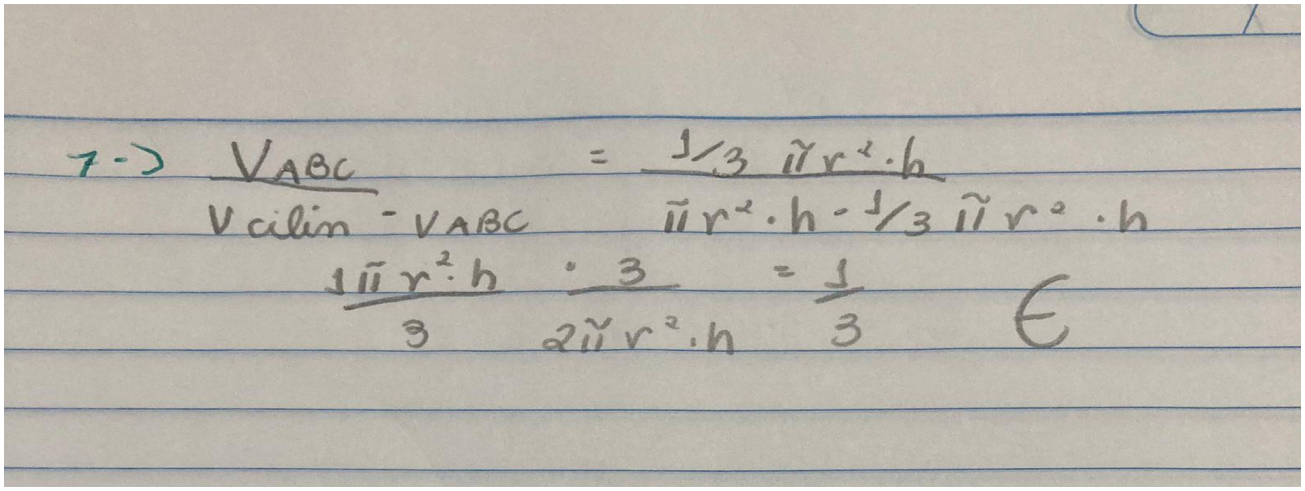
$45\pi - 1\pi = 44\pi$

E

6- $V_{prisma} = (2\pi r^2 \cdot h \cdot 2)/3 = 2$

$V_{cone} \quad (\pi r^2 \cdot h \cdot 2)/3$

A


7 -> $\frac{V_{ABC}}{V_{cilin} - V_{ABC}} = \frac{\frac{1}{3}\pi r^2 \cdot h}{\pi r^2 \cdot h - \frac{1}{3}\pi r^2 \cdot h}$
$\frac{\frac{1}{3}\pi r^2 \cdot h}{3} \cdot \frac{3}{2\pi r^2 \cdot h} = \frac{1}{3}$
E

2 -) C

Troncos

1-) $V_{cone} = \frac{1}{3}\pi r^2 \cdot h = \frac{1}{3}\pi 3^2 \cdot 8 = 24\pi\ cm^3$

$24/2 = 12\pi$ líquido

$\frac{V}{v} = \frac{H^3}{h^3} \rightarrow \frac{24\pi}{12\pi} \rightarrow \frac{8^3}{h^3} \rightarrow 2 = \frac{512}{h^3} \rightarrow h = 4\sqrt[3]{4}$

C

2-) $\frac{V_{sorvete}}{V_{copo}} = \left(\frac{16}{20}\right)^3 = \left(\frac{4}{5}\right)^3 = \frac{64}{125}$ $\quad V_{sorvete} \subset \frac{64 V_{copo}}{125}$

$V_{copo} = V_{sorvete} + V_{espuma} \rightarrow V_{copo} = \frac{64 V_{copo}}{125} + V_{espuma}$

$V_{espuma} = \frac{64}{125} \cong 50\%$

C

3-) $\frac{1}{2} \cdot \frac{V_I}{V_I} = \left(\frac{h}{H}\right)^3 = \sqrt[3]{\frac{1}{2}} = \frac{h}{H} = \frac{1}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}}$

$\subset \frac{\sqrt[3]{4}}{2}$

$\subset h = \frac{H\sqrt[3]{4}}{2}$

4-) $5^2 = 3^2 + h^2 \rightarrow 25 = 9 + h^2 \rightarrow h = \sqrt{16} = 4cm$

5-) $A_T = A_B + A_6 + A_l = \pi R^2 + \pi r^2 + \frac{(2\pi r + 2\pi R) \cdot y}{2}$

$A_T = 25\pi + 4\pi + \frac{(10\pi + 4\pi) \cdot 5}{2} = 64\pi m^2$

$V_T = \frac{\pi h}{2}(R^2 + Rr + r^2) = \frac{\pi 4}{3} \cdot (25 + 10 + 4)$

$\subset 52\pi\ cm^3$

6 - $V_T = \pi(49 + 21 + 9) = 79\pi$ D

7 - $\frac{R}{H} = \frac{r}{h} \rightarrow r = \frac{Rr}{H}$ $V_{cone} = \frac{\pi R^2 H}{3}$

$V_{cone} \frac{\pi r^2 h}{3} = \frac{\pi \left(\frac{Rh}{H}\right)^2 h}{3} = \frac{\pi R^2 h^3}{3H^2}$

$V_{Tronco} = V - v = \frac{\pi R^2 H}{3} - \frac{\pi R^2 h^3}{3H^2} = \frac{\pi R^2 (H^3 - h^3)}{3H^2}$

$= 2h^3 = H^3$

$\rightarrow h^3 = \frac{H^3}{2} \rightarrow h = \frac{H\sqrt[3]{4}}{2}$

A