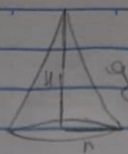
Evelyn Santos de Santana

CTII348

Cones e Troncos

Cones

(1)



$R = 20cm$

$R = g$

$g = 20cm$

300	2
150	2
75	3
25	5
5	5
1	

Asemi = Alateral

cartolina

$\frac{1}{2}.\pi.R^2 = \pi.r.g$

$\frac{1}{2}.\cancel{\pi}.20^2 = \cancel{\pi}.r.20$

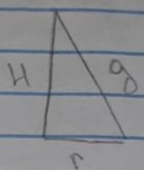
$\frac{1}{2}\, 20^2 = r.20$

$20^2 = r.40$

$400 = r.40$

$r = 400/40$

$r = 10\,cm$



A

$g^2 = H^2 + r^2$

$20^2 = H^2 + 100^2$

$400 = H^2 + 100$

$H^2 = 400 - 100$

$H^2 = 300$

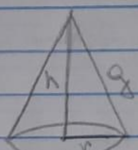
$H = \sqrt{300}$

$H = \sqrt{2^2 . 3 . 5^2}$

$H = 2.5\sqrt{3}$

$\boxed{H = 10\sqrt{3}}$

(2)



$h = 12cm$

$V = 64\pi cm^3$

$g = ?$

$64\cancel{\pi} = \frac{1}{3}\,\cancel{\pi}.R^2.h$

$64.3 = R^2.12$

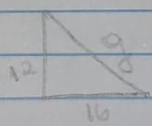
$192 = R^2.12$

$R^2 = 192/12$

$R^2 = 16$

$R = \sqrt{16}$

$R = 4$



$g^2 = h^2 + R^2$

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

$g^2 = 144 + 16$

$g^2 = 160$

$g = \sqrt{160}$

$g = \sqrt{2^2.2^2.2.5}$

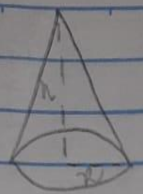
$g = 2.2\sqrt{2.5}$

$\boxed{g = 4\sqrt{10}}$

160	2
80	2
40	2
20	2
10	2
5	5
1	

B

(3)



$h = r$

$A_{base} = 36\pi \, cm^2$

$36\cancel{\pi} = \cancel{\pi} r^2$

$r^2 = 36$

$r = \sqrt{36}$

$r = 6$

$h = 6$

Volume = 1/3 Volume cilindro

$Volume = \frac{1}{3} \pi r^2 . h$

$Volume = \frac{1}{\cancel{3}} . \pi \, 6^2 . \cancel{6}^{2}$

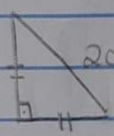
$Volume = \pi \, 6^3 . 2$

$Volume = 36 . 2\pi$

$\boxed{Volume = 72\pi}$

A

(4)



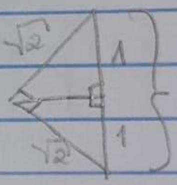
$2^2 = x^2 + x^2$

$4 = 2x^2$

$x^2 = 4/2$

$x^2 = 2$

$x = \sqrt{2}$



$V = \frac{\pi . 1^2 . 1}{3}$

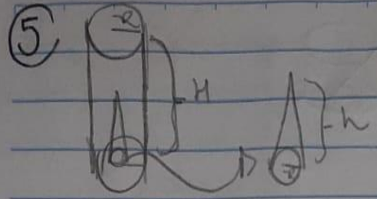
$V = \frac{\pi}{3}$

$V = \frac{\pi . 1 . 2}{3}$

$\boxed{V = \frac{2\pi}{3}}$

E

5



$H = 10$
$R = 3$
$h = 3$
$r = 1$

Vol Recipiente = Vol cilindro - Vol Cone

$Vol\ Cilindro = \pi . R^2 . H/2$ | $Vol\ Cone = 1/3 . \pi . r^2 . 3$
$Vol\ Cilindro = \pi . 3^2 . 10/2$ | $Vol\ Cone = 1/\cancel{3}\ \pi\ 1^2 . \cancel{3}$
$Vol\ Cilindro = \pi . 9 . 5$ | $Vol\ Cone = 1\pi$
$Vol\ Cilindro = 45\pi$

Vol Recipiente = Vol Cilindro - Vol Cone
$Vol\ Recipiente = 45\pi - 1\pi$
$Vol\ Recipiente = 44\pi$

E

6 $\frac{Volume\ Prisma}{Volume\ Cone} = \frac{Abase\ Prisma . 2/3\ h}{1/3\ Abase\ Cone . h}$

Abase Prisma = Abase Cone
Altura Cone = 2/3 Alt Prisma

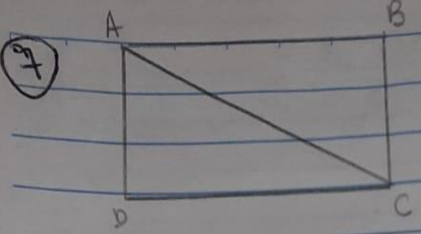
$\frac{Volume\ Prisma}{Volume\ Cone} = \frac{2/3\ \cancel{h}}{1/3\ \cancel{h}}$

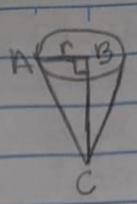
$\frac{Volume\ Prisma}{Volume\ Cone} = \frac{2/\cancel{3}}{1/\cancel{3}}$

$\boxed{\frac{Volume\ Prisma}{Volume\ Cone} = 2}$

A

7





$V_{ABC} = V_{cone}$

$V_{ADC} = V_{cilindro} - V_{cone}$

$V_{ADC} = \pi . r^2 . h - \frac{1}{3} \pi . r^2 . h$

$V_{ADC} = \frac{2}{3} \pi . r^2 . h$

$$\frac{V_{ABC}}{V_{ADC}} = \frac{1/3\, \cancel{\pi} . \cancel{r^2} . \cancel{h}}{2/3\, \cancel{\pi} . \cancel{r^2} . \cancel{h}}$$

$$\frac{V_{ABC}}{V_{ADC}} = \frac{1/\cancel{3}}{2/\cancel{3}}$$

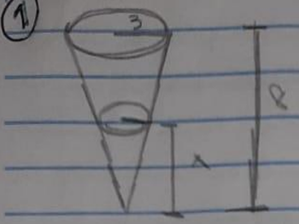
$$\boxed{\frac{V_{ABC}}{A_{ADC}} = \frac{1}{2}}$$

E

Troncos

data . .
S T Q Q S S D

(1)



$R = 3cm$
$H = 8cm$

$V_{Cone\ maior} = \frac{1}{3}.\pi.R^2.h$

$V_{C maior} = \frac{1}{3}.\pi.3^2.8$

$V_{C maior} = \frac{1}{\cancel{3}}.\pi.\cancel{3^2}.8$

$V_{C maior} = \pi.3.8$

$V_{C maior} = 24\pi\ cm^3$

$V_{C menor} = \frac{1}{2}.V_{C maior}$

$V_{C menor} = \frac{1}{\cancel{2}}.\cancel{24}$

$V_{C menor} = 12\pi\ cm^2$

$$\frac{V_{C maior}}{V_{C menor}} = \left(\frac{x}{8}\right)^3 \Rightarrow \frac{\cancel{12\pi}}{\cancel{24\pi}} = \frac{x^3}{8^3}$$

$$\frac{1}{2} = \frac{x^3}{8^3}$$

$2x^3 = 8^3$

$x^3 = \frac{4.\cancel{2}.8^2}{\cancel{2}}$

$x^3 = 4.8$

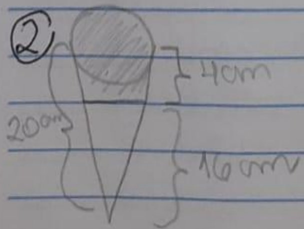
$x = \sqrt[3]{4.2^3.2^3}$

$x = 2.2\sqrt[3]{4}$

$x = 4\sqrt[3]{4}$

(E)

(2)



$$\frac{V_{C menor}}{V_{C maior}} = \left(\frac{\cancel{16}}{\cancel{20}}\right)^3 \Rightarrow \frac{V_{C menor}}{V_{C menor}} = \left(\frac{8}{10}\right)^3$$

$$\frac{VC_{menor}}{VC_{maior}} = \frac{512}{1000}$$

$VC_{menor} = 51,2\%$

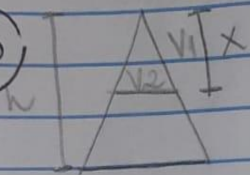
$V_{espuma} = VC_{maior}(\%) - Vc_{menor}(\%)$

$V_{espuma} = 100\% - 51,2\%$

$V_{espuma} = 48,8\% \cong 50\%$

C

3



$$\frac{V_2}{V_1} = \frac{1}{2}$$

$$\frac{1}{2} = \left(\frac{x}{h}\right)^3 \Rightarrow \frac{1}{2} = \frac{x^3}{h^3}$$

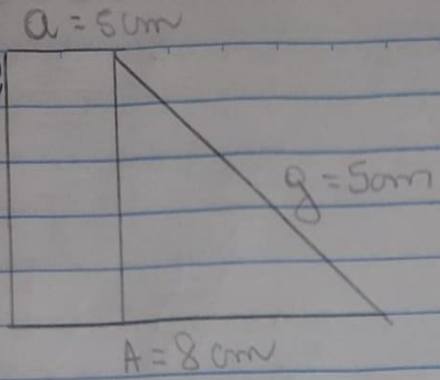
$$h^3 = 2x^3 \Rightarrow x^3 = \frac{h^3}{2}$$

$$x = \frac{\sqrt[3]{h^3}}{\sqrt[3]{2}} \Rightarrow x = \frac{h}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}}$$

$$\boxed{x = \frac{h\sqrt[3]{4}}{2}}$$

data . .
S T Q Q S S D

(4)



$g^2 = h^2 + (A - a)^2$

$5^2 = h^2 + (8-5)^2$

$5^2 = h^2 + 3^2$

$25 = h^2 + 9$

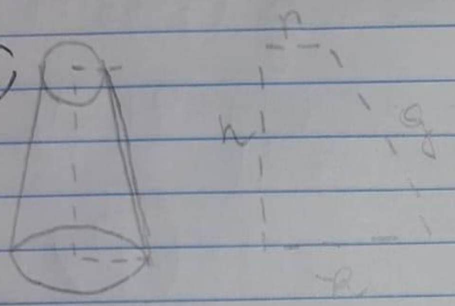
$h^2 = 25 - 9$

$h^2 = 16$

$h = \sqrt{16}$

$\boxed{h = 4cm}$

(5)



$g^2 = h^2 + (R - r)^2$

$g^2 = 4^2 + (5-2)^2$

$g^2 = 4^2 + 3^2$

$g^2 = 16 + 9$

$g^2 = 25$

$g = \sqrt{25}$

$g = 5$

$A total = \pi [(R^2 + r^2) + g(R + r)]$

$A total = \pi [(5^2 + 2^2) + 5(5+2)]$

$A total = \pi [(25+4) + 25 + 10]$

$A total = \pi [29 + 25 + 10]$

$\boxed{A total = 64\pi}$

$Volume = \pi . h/3 (R^2 + r^2 - R \cdot r)$

$Volume = \pi 4/3 (5^2 + 2^2 - 5 \cdot 2)$

$Volume = \pi 4/3 (25 + 4 - 5 . 2)$

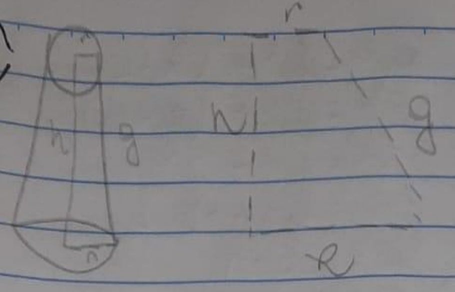
$Volume = \pi . 4/3 . (29 + 10)$

$Volume = \pi . \frac{4}{3} . 39$

$Volume = \frac{156\pi}{3}$

$\boxed{volume = 52\pi}$

⑥



$g^2 = R^2 + (R - r)^2$

$5^2 = R^2 + (7 - 3)^2$

$5^2 = R^2 + 4^2$

$25 = R^2 + 16$

$R^2 = 25 - 16$

$R^2 = 9$

$R = \sqrt{9}$

$R = 3$

$Volume = \pi \cdot \frac{R}{3} (R^2 + r^2 + R \cdot r)$

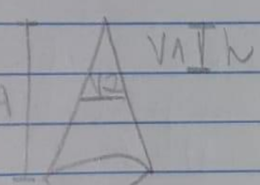
$Volume = \pi \cdot \frac{\cancel{3}}{\cancel{3}} \cdot (7^2 + 3^2 + 7 \cdot 3)$

$Volume = \pi (49 + 9 + 21)$

$\boxed{Volume = 79\pi}$

D

⑦



$\frac{V2}{V1} = \frac{1}{2}$

$\frac{1}{2} = \left(\frac{R}{H}\right)^3 \rightarrow \frac{1}{2} = \frac{R^3}{H^3}$

$H^3 = 2R^3 \rightarrow R = \frac{H^3}{2}$

$R = \frac{\sqrt[3]{H^3}}{\sqrt[3]{2}} \rightarrow R = \frac{H}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}}$

$\boxed{R = \frac{H\sqrt[3]{4}}{2}}$

A