

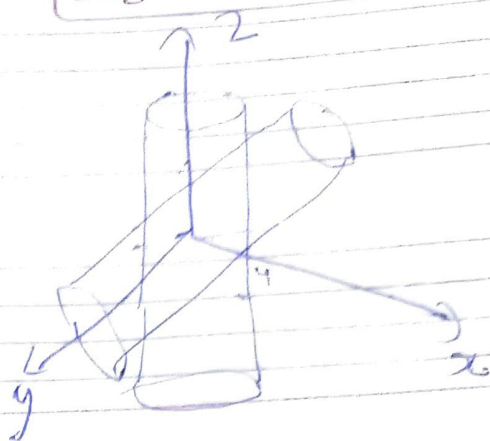
$$x^2 + y^2 = 4$$

$$x^2 + z^2 = 4$$

$$z = \sqrt{4 - x^2}$$

$$z_y = 0$$

$$z_x = \frac{1}{2\sqrt{4-x^2}} \cdot x - 2x = \frac{-x}{\sqrt{4-x^2}}$$



Surface area (above xy-plane)

$$S.A = 2 \iint_A \sqrt{1 + (z_x)^2 + (z_y)^2} \, dx \, dy$$

$$A: x^2 + y^2 = 4$$

$$\Rightarrow 2 \iint_A \sqrt{1 + 0 + \frac{x^2}{4-x^2}} \, dx \, dy$$

$$\Rightarrow 4 \iint_A \frac{1}{\sqrt{4-x^2}} \, dx \, dy$$

$$\Rightarrow 4 \int_{x=-2}^{x=2} \int_{y=-\sqrt{4-x^2}}^{\sqrt{4-x^2}} \frac{1}{\sqrt{4-x^2}} \, dy \, dx \Rightarrow 8 \int_{x=-2}^2 dx$$

$$\Rightarrow \boxed{32}$$

Total surface area = 32×2
 $= \boxed{64} \text{ m}$