Surface Area of a Solid

Raindrop 5b

A cylinder has two circular ends of radius r (cm) and has height h (cm).
The total surface area of the cylinder is A (cm^2).
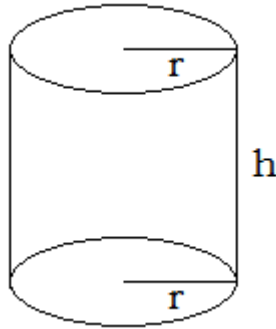
(i) Derive a formula for the radius of the cylinder in terms of the height h and the total surface A of the cylinder.

(ii) For the case where the height of the cylinder is π (cm) and the total surface area of the cylinder is π^3 (cm^2), show that:

$$r = \frac{1}{2}(\sqrt{3} - 1)\pi$$

The answer to part (i) follows on the next page …

(i) Answer: r = $\dfrac{\sqrt{(\pi^2 h^2 + 2\pi A)} - \pi h}{2\pi}$

(ii) Derive the given formula.