



What is the formula for the total surface area of a cone?

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- A. $\pi r(h + r)$
- B. $2\pi rh$
- C. $\pi r^2 + 2\pi rh$
- D. πr^2

Show Answer...

Correct Answer: C ($\pi r^2 + 2\pi rh$)

Explanation:

The total surface area of a cone consists of two parts: the circular base and the lateral surface. The formula for the total surface area of a cone is:

$$\text{Total Surface Area} = \pi r^2 + \text{Lateral Surface Area}$$

where r is the radius of the circular base, and h is the height of the cone.

The lateral surface area of a cone is given by the formula:

$$\text{Lateral Surface Area} = \pi r l$$

where l is the slant height of the cone.

To calculate the slant height, we can use the Pythagorean theorem:

$$l^2 = r^2 + h^2$$

$$\text{Therefore, } l = \sqrt{r^2 + h^2}$$

Substituting this value for l into the formula for the lateral surface area, we get:

$$\text{Lateral Surface Area} = \pi r \sqrt{r^2 + h^2}$$

Combining this with the formula for the total surface area, we get:



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$$\text{Total Surface Area} = \pi r^2 + \pi r \sqrt{r^2 + h^2}$$

Simplifying this expression further, we get:

$$\text{Total Surface Area} = \pi r^2 + 2\pi rh$$

Therefore, the correct answer is option C ($\pi r^2 + 2\pi rh$).