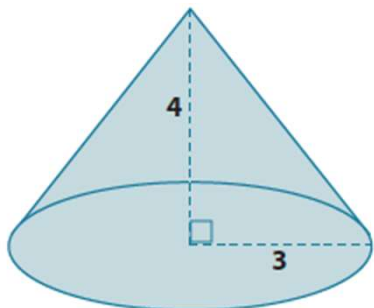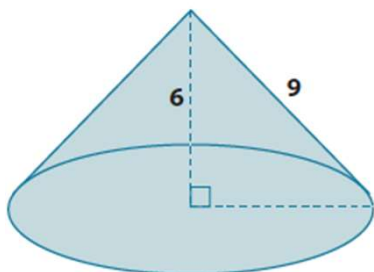# Pythagorean Theorem in 3D Solids

1. What is the lateral length (slant height) of the cone shown below?
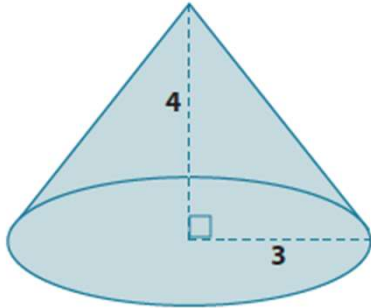

1. Determine the exact volume of the cone shown below.

Pythagorean Theorem in 3D Solids

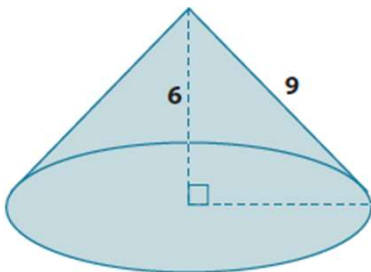1. What is the lateral length (slant height) of the cone shown below?

Let c be the lateral length.

$$3^2 + 4^2 = c^2$$
$$9 + 16 = c^2$$
$$25 = c^2$$
$$\sqrt{25} = \sqrt{c^2}$$
$$5 = c$$

The lateral length of the cone is 5 units

1. Determine the exact volume of the cone shown below.

Let r be the radius of the base

$$6^2 + r^2 = 9^2$$
$$36 + r^2 = 81$$
$$r^2 = 45$$

The area of the base is 45π units^2.

$$V = \frac{1}{3}Bh$$
$$V = \frac{1}{3}(45)\pi(6)$$
$$V = 90\pi$$

The volume of the cone is 90π units^3.

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