

## Conditions

A right circular cone contains some fluid. The height of the water level is 9 cm. Now, an additional  $37\pi$  cubic cm of fluid is poured into the cone. (Let the height rise of water level be  $x$  cm.)

(a) Find the rise of the water level.

(b) Find the percentage increase of the surface area in contact with the fluid.

## Solution

We know, that the volume of a truncated cone is:

$$V = \frac{1}{3}(HS_2 - hS_1)$$

$$H = 9 + x$$

$$h = x$$

$$V = 37$$

$$37 = \frac{1}{3}((9 + x)S_2 - xS_1)$$

$$x = \frac{111 - 9S_2}{(S_2 - S_1)}$$

We can say, that the  $x$  value depends on the area of upper and lower bases of a truncated cone. As we have no information about those values, we can't provide the number which is equal to  $x$ . Only the formula, how to calculate.

The surface area can be found by using the following formula:

$$V = \frac{1}{3}SH$$

As we don't know the area of the base, we can't calculate the percentage increase of the surface area in contact with the fluid.