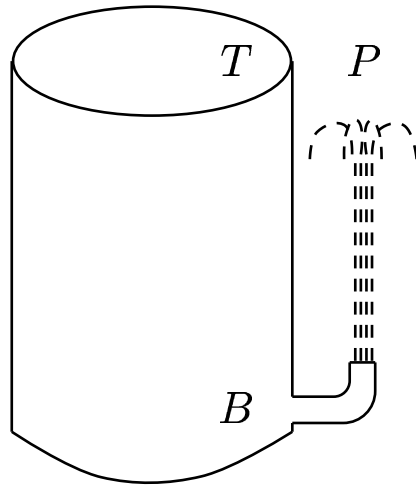


A fountain spout is attached to a hole at the bottom of a bucket. If friction effects are negligible, this fountain squirts water to a height.



Choose one

- A) above the water level of the bucket.
 - B) which equals to the water level of the bucket.
 - C) less than the water level of the bucket.
-

Label the water level in the container at the top by “1”, the spout at the bottom by “2”.

Bernoulli’s principle implies that

$$P_1 + \frac{1}{2} \rho v_1^2 + \rho g y_1 = P_2 + \frac{1}{2} \rho v_2^2 + \rho g y_2 .$$

The atmospheric pressure $P_1 = P_2$.

For large enough bucket, v_1 , the speed at which the water level is lowering, is negligible, *i.e.*, $v_1 = 0$.

Setting $y_1 - y_2 = h$, one gets $v_2 = \sqrt{2 g h}$.

So the water shoots up with the same speed, as that if it were to free-fall from the top.

Applying the Bernoulli’s principle one more time, one finds that the water shoots up to the same height of h .

Answer **B**