Answer on question #58228, Physics / Mechanics — Relativity

Question   an air bubble has a volume of 2cm^3 when released at a depth of 20m in water. what will its volume be when it reaches the surface. assume that the temperature does not change and that atmospheric pressure is equivalent to the atmospheric pressure from a column of water 10m deep

Solution   Pressure 20m under water is three times as on the surface. As the temperature does not change we have

$$p_1V_1 = p_2V_2$$

$$\frac{p_1}{p_2} = \frac{V_2}{V_1}$$

So, when the bubble comes to surface and pressure drops in 3 times, the volume must increase in 3 times. Hence, volume will be $3 \cdot 2 = 6 \text{ cm}^3$.