

What is the pressure at the bottom of the Marianas Trench (11,034 m = 36,201 ft = 6.9 mi), which is the deepest part of the ocean?



SOLUTION:

The pressure at the bottom of the Marianas Trench, assuming salt water to be incompressible, is:

$$p_{\text{bottom}} = p_{\text{top}} + \rho_{\text{saltH2O}}gh$$

where

$$p_{\text{top}} = 101 \text{ kPa (abs)}$$

$$\rho_{\text{saltH2O}} = 1025 \text{ kg/m}^3$$

$$g = 9.81 \text{ m/s}^2$$

$$h = 11034 \text{ m}$$

Hence, the pressure at the bottom is:

$$p_{\text{bottom}} = 111 \text{ MPa (abs)} = 1100 \text{ atm (abs)!}$$

