Answer on Question #51851-Physics-Mechanics-Kinematics-Dynamics

What are the dimensions of pressure gradient?

MLT−2

ML−2T−2

ML3T−2

M−2L2T−3

Solution

Pressure has dimension of

$$[p] = \frac{N}{m^2}.$$

Which is

$$[p] = \frac{kg \cdot \frac{m}{s^2}}{m^2} = \frac{kg}{s^2 \cdot m}.$$

Hence, pressure gradient will have dimension

$$[\nabla p] = [\nabla] \cdot [p] = \frac{1}{m} \cdot \frac{kg}{s^2 \cdot m} = \frac{kg}{(s \cdot m)^2} = ML^{-2}T^{-2}.$$

Answer: $\boldsymbol{ML^{-2}T^{-2}}$.