

Answer on question #51852, Physics, Mechanics — Kinematics — Dynamics

Question Which of the following equations is not dimensionally consistent? the symbols have their usual meaning.

$$s = ut - gt^2$$

$$Ft = mv - m_0$$

$$-kx + F_0 \sin \omega t = ma$$

$$w^2 = w_0^2 + \alpha\theta$$

Solution Equation $Ft = mv - m_0$ is not dimensionally consistent, because m_0 has dimension of mass, while other terms in this equation have dimension of force.