Answer on Question #55618, Physics - Other

The velocity v of a particle is given by the equation v = 6t^2 - 6t^3, where v is in m/s and t is the time in seconds. What is the minimum velocity?

Answer

Firstly, let's find extremum points from the equation

$$\frac{dv}{dt} = 0.$$

$$\frac{dv}{dt} = 12t - 18t^2 = 6t(2 - 3t) = 0 \ \rightarrow \ t_1 = 0; t_2 = 2/3.$$

$$t_2 = \frac{2}{3} s \ it \ is \ maximum. Absolute \ minimum \ value \ is \ v(0) = 0\frac{m}{s},$$

$$but \ for \ t \rightarrow \ \infty, v \ \rightarrow \ -\infty.$$

Thus, $|\boldsymbol{v_{min}}| = \mathbf{0}\frac{\boldsymbol{m}}{\boldsymbol{s}}$ $\boldsymbol{and}$ $\boldsymbol{v_{min}} = -\infty$.