A particle moves along a straight line such that its displacement at any time t given by s=(t cube-6 t square-3t+4) meters .the velocity when the acceleration is zero is

Velocity is the rate of change of the position of an object:

$$v = \frac{ds}{dt} = \frac{d}{dt}(t^3 - 6t^2 - 3t + 4) = 3t^2 - 12t - 3$$

Acceleration is the rate of change of the velocity of an object:

$$a = \frac{dv}{dt} = \frac{d}{dt}(3t^2 - 12t - 3) = 6t - 12$$

If the acceleration equals zero:

$$6t - 12 = 0$$

Therefore $t = 2$

So, the velocity when the acceleration is zero is:

$$v(2) = 3 * 2^2 - 12 * 2 - 3 = 12 - 24 - 3 = -15\frac{m}{s}$$

Answer: $v = -15\frac{m}{s}$