Determine order and degree (if defined) of differential equation $\left(\frac{ds}{dt}\right)^4 + 3s\frac{d^2s}{dt^2} = 0$.

Solution:

$$\left(\frac{ds}{dt}\right)^4 + 3s\frac{d^2s}{dt^2} = 0$$

Highest order derivative in the given differential equation is $\frac{d^2s}{dt^2}$. Its order is two.

It is a polynomial equation in $\frac{d^2s}{dt^2}$ and $\frac{ds}{dt}$.

The power $\frac{d^2s}{dt^2}$ is 1. Degree is one.