A linear Differential Equation;
$a_n(x)\frac{d^ny}{dx^n}+a_{n-1}(x)\frac{d^{n-1}y}{dx^{n-1}}+\cdots+\frac{dy}{dx}+a_0(x)y=F(x)$, where the coefficients $a_n(x), a_{n-1}(x), \cdots, a_1(x), a_0(x)$ are the polynomials of x.
Now:

A point x_1 will be the ordinary point of the above linear DE, if at this point $a_n(x)\neq 0$ i.e. $a_n(x_1)\neq 0$ and if $a_n(x_1)=0$,then x_1 is called the singular point of the above DE.

For example, for the 2nd order linear DE say $(x^2-1)\frac{d^2y}{dx^2}+x\frac{dy}{dx}-9y=\sin x$, here the coefficient of highest order derivative:$\frac{d^2y}{dx^2}$ is (x^2-1).

$\Longrightarrow$ordinary points are $(x^2-1)\neq 0 \Longrightarrow x^2\neq 1 \Longrightarrow x\neq \pm 1$.This means all the points except $x=\pm 1$ are the ordinary points of the DE and $x=\pm 1$ are the singular points.

Similarly for $\frac{d^2y}{dx^2}+x\frac{dy}{dx}-9y=\sin x$ or $x^0\frac{d^2y}{dx^2}+x\frac{dy}{dx}-9y=\sin x$, there is no singular point as $x^0\neq 0$ for any real value of x as $x^0=1$.Hence its ordinary points will be whole real line $\mathbb{R}$.

For $x\frac{d^2y}{dx^2}+x\frac{dy}{dx}-9y=\sin x$, $x=0$ is the only singular point and all other points are ordinary i.e. $\mathbb{R}-\{0\}$.