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remains unstable and simple, since $\frac{dv(x)}{dx} > 0$ for all $x$ in the neighbourhood of ~~x=3~~, and if $\frac{dv(x)}{dx} > 0$, it is not equal to 0.

If the perturbation is −ve, the graph of $v(x)$ is lowered by the magnitude of $k$, and the point of tangency with the $x$-axis becomes two points of intersection, hence at all the fixed points the graph of $v(x)$ crosses the $x$-axis, so $\frac{dv}{dx} \neq 0$ at the fixed points, and the fixed points are all simple (as explained earlier $\frac{dv}{dx} \neq 0$ for all $x$ in the neighbourhood of $x=-3$ so the fixed point at $x=-3$ is unchanged in nature under the effect of a small perturbation)

The fixed point at $x=1$ becomes two fixed points at $x=1-\varepsilon_1$ and $x=1+\varepsilon_2$.

At $x=1-\varepsilon_1$, $\frac{dv}{dx} < 0$ so this fixed point is stable and simple, and at $x=1+\varepsilon_2$, $\frac{dv}{dx} > 0$ so this fixed point is unstable and simple.

The fixed point at $x=-3$ moves