from the graph $x^* = 0$ (unstable).

let $\dot{x} = \tan(x) = 0$.

    get $x^* = 0$.

Due to $f'(x^*) = \sec^2(x) = 1$.

    $\therefore x^* = 0$ is unstable.

modify:

$\dot{x} = \tan(x) = 0$.

$x = 0$ or $x = \pi n$ $n \in \mathbb{Z}$

Due to $f'(x) = \sec^2(x)$

$\therefore x^* = 0$ $f'(x) = 1$.

$x^* = n\pi$ $f'(x) = 1$