If velocity is increasing, the position must be positive.

\[ S(x) = \text{position} \]
\[ V(x) = \text{velocity} \]
\[ V(x) = S'(x) \]

Consider \( S(x) = \frac{x^2}{2} - 2 \) then \( V(x) = x \)

In this case, \( V(x) \) is increasing from \((-\infty, 0)\) but there is at least one value where \( S(x) \) is negative on this interval.

\( S(x) \) is negative \( V(x) \) is always increasing

Le Burr