$0 < a_1 < b_1$

We know $\boxed{A.M \geq G.M}$

$\Rightarrow \boxed{\frac{a_n + b_n}{2} \geq \sqrt{a_n . b_n}}$

$\Rightarrow \boxed{b_{n+1} > a_{n+1}}$ $\forall n \geq 1$

Now

$\Rightarrow a_{n+1} = \sqrt{a_n . b_n} > \sqrt{a_n^2} = a_n$

$\Rightarrow \boxed{a_{n+1} > a_n}$ $\forall n \geq 2$

$\Rightarrow \{a_n\}$ is monotonically increasing and bounded above by b_2

and $b_{n+1} = \frac{a_n + b_n}{2} < \frac{b_n + b_n}{2} = b_n$

$\Rightarrow \boxed{b_{n+1} < b_n}$

$\Rightarrow \{b_n\}$ is monotonic decreasing and bounded below by a.

So, $\{a_n\}, \{b_n\}$ is convergent.

Now let $\lim a_n = l_1$ & $\lim b_n = l_2$

So $\lim a_{n+1} = \lim \sqrt{a_n . b_n}$

$l_1 = \sqrt{l_1 . l_2} \Rightarrow \boxed{l_1 = l_2}$

So, option (b) is correct