The voltage across the capacitor is initially $v(0) = -1$ V. When (approximately) will the voltage $v(t)$ be below $+3$ V?

A. For all time: $v(t) < 3V$, $t = -\infty \ldots \infty$

B. Until the switch is closed: $v(t) < 3V$, $t < 0$

C. Until 2 ms: $v(t) < 3V$, $t < 2$ ms

D. After 2 ms: $v(t) < 3V$, $t > 2$ ms

E. Until 1/2 ms: $v(t) < 3V$, $t < 1/2$ ms
Until 2 ms: $v(t) < 3\text{V}$, $t < 2\text{ms}$

$$
v(t) = -6e^{-t/\tau} + 5 \quad t > 0
$$

$\tau = RC = 2\text{ms}$

Exponential changes from 1 to about 1/3 in one time constant. $-6/3 + 5 = 3$.

Change of 4 V out of 6 V eventual total.