Consider the circuit below. Q2 is operating in the active linear region. What is $V_{out}$?

\[ I_b = 0.01 \text{mA} \]

$\beta_{Q1 + Q2} = 100$

\[ V = 10 \text{V} \]

\[ R = 1 \text{k}\Omega \]

\[ R = 100 \Omega \]

If $Q_2$ is active linear, and if $I_b = 0.01 \text{mA}$, $I_e \approx 1 \text{mA}$.

The voltage across 1000$\Omega$ resistor is 1V, so if $V_{BE} = 1.2V$ $Q_2$ is not "on" as the b-e junction is not forward biased.

So if $Q_1$ is off, $V_{out} = 10 \text{V}$.