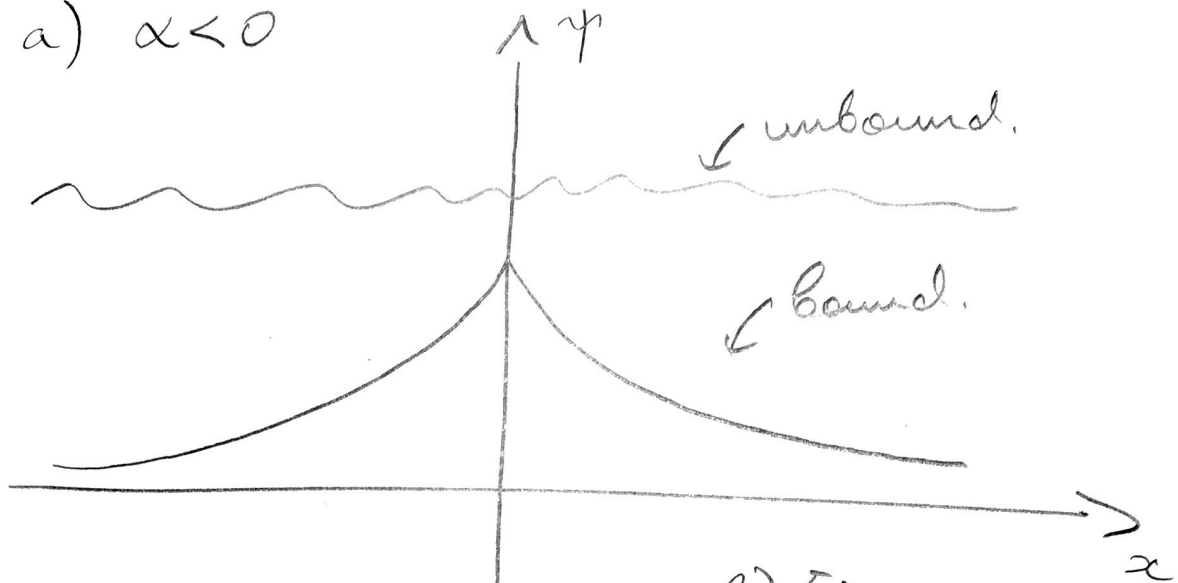


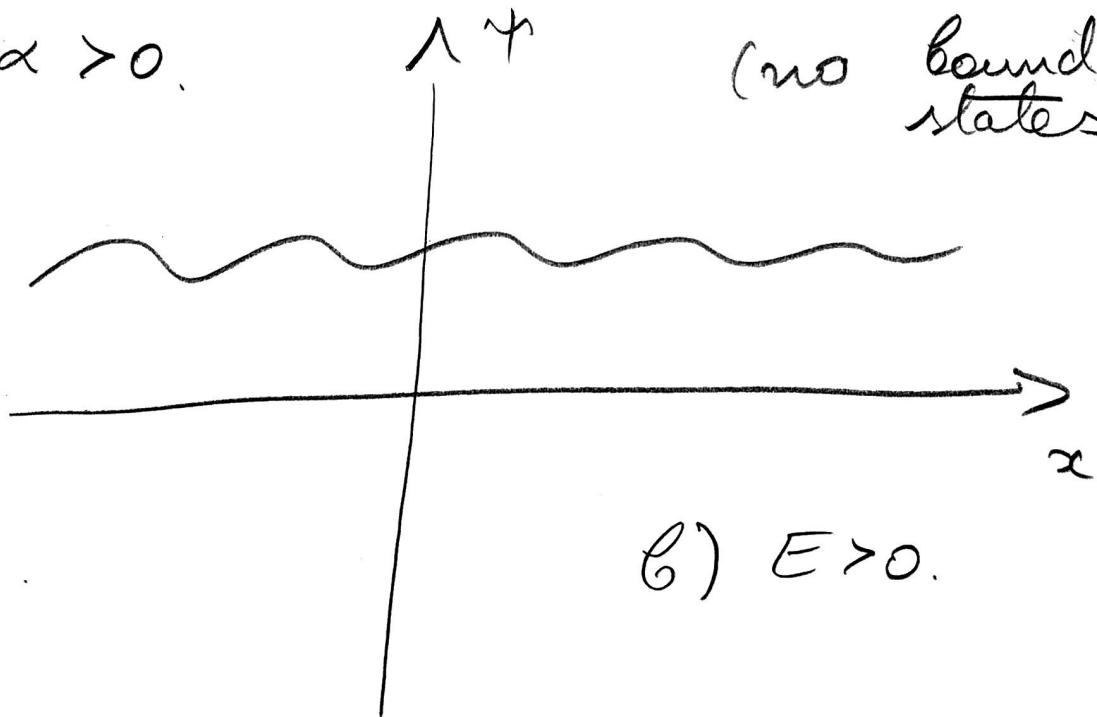
a) $\alpha < 0$



b) $E > 0 + E < 0$

↑
only 1
bound state..

$\alpha > 0$

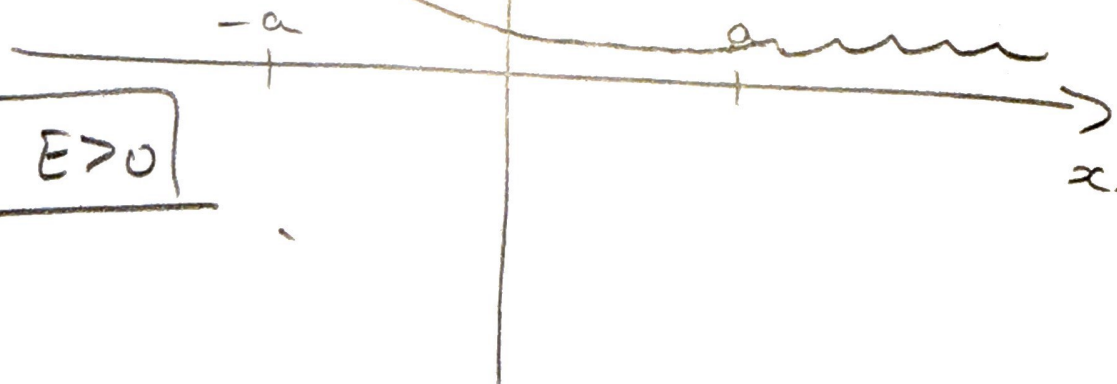


c) $E > 0$

c) $V_0 > 0$

$E > V_0$

$E < V_0$

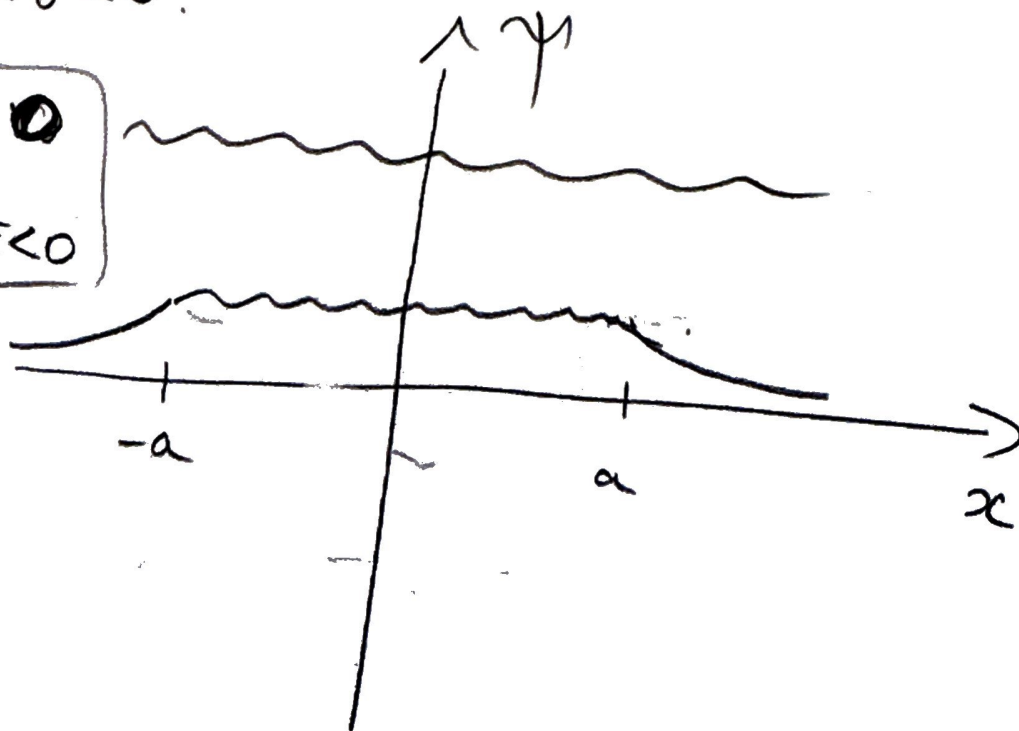


d) $E > 0$

$V_0 < 0$

d) $E > 0$

$V_0 < E < 0$



c) Tunneling is the phenomenon where a quantum particle has a nonzero probability to pass through a classically forbidden region. So for the finite square barrier, $V_0 > 0$, a particle approaching from $x \rightarrow -\infty$ with $E < V_0$ has nonzero probability to pass through the barrier and be found at $x > a$. Same for δ -function barrier — it can be found at $x > 0$.