

Worksheet #18

(Friday, November 17, 2023)

Name**Questions (10 pts):**

Consider the transmission coefficients we obtained for a rectangular potential barrier of the height V_0 and width a . Analyze these expressions for the cases when $E > V_0$ and $E < V_0$ and get as much physics as you can. In particular:

For the case $0 < E < V_0$:

- 1) What happens if $E \rightarrow 0$?

- 2) What happens if E approaches V_0 (i.e. $V_0 - E$ is very small)? Derive the E -independent transmission coefficient for this case and comment on it as a function of V_0 and a .

For the case $E > V_0$:

- 1) Is there any difference between QM transmission and the classical prediction?

- 2) Under what condition(s) does the transmission coefficient approach/equal to 1?