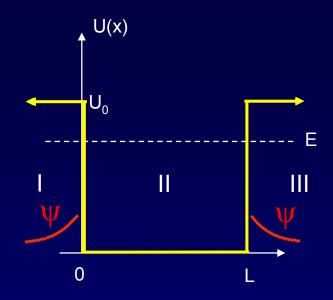# Solution

In region **III**, the wave function has the form

$$\psi_{III}(x) = D_1 e^{Kx} + D_2 e^{-Kx}$$

1. As x → ∞, the wave function must vanish (why?). What does this imply for $D_1$ and $D_2$?

   **a. $D_1 = 0$**    b. $D_2 = 0$    c. $D_1$ and $D_2$ are both nonzero.

   Since $e^{Kx}$ → ∞ as x → ∞, $D_1$ must be 0.

2. What can we say about the coefficients $C_1$ and $C_2$ for the wave function in region I?

   $$\psi_I(x) = C_1 e^{Kx} + C_2 e^{-Kx}$$

   a. $C_1 = 0$    b. $C_2 = 0$    c. $C_1$ and $C_2$ are both nonzero.