

$$c) \langle V(x) \rangle = \frac{1}{2} m \omega^2 \langle x^2 \rangle = \frac{1}{2} m \omega^2 \frac{\hbar}{2m\omega}$$

$$\underline{\underline{20 \langle V(x) \rangle = \frac{\hbar \omega}{4}}}$$

$$6-41) a) \frac{\hbar^2 k_1^2}{2m} = E = 2V_0$$

$$\frac{\hbar^2 k_2^2}{2m} = E - V_0 = V_0 \quad \rightarrow \quad k_1 = \sqrt{2} k_2$$

$$b) \quad R = \left( \frac{k_1 - k_2}{k_1 + k_2} \right)^2 = \left( \frac{\sqrt{2} - 1}{\sqrt{2} + 1} \right)^2 = 0.029$$

$$c) \quad T = 1 - R = 0.971$$

$$d) \quad 0.971 \times 10^6$$