HOE 7

$$E_{nl} = \hbar\omega\left(2(n-1) + l + \frac{3}{2}\right) - V_0 \qquad n = 1, 2, 3, \ldots$$

$$b = \sqrt{\frac{\hbar}{m\omega}} = \frac{\hbar}{\sqrt{m\hbar\omega}} = \hbar\left(m\,\frac{E_{nl} + V_0}{2(n-1) + l + 3/2}\right)^{-1/2}$$

$$V_0 + E_{n_1 l_1} = \left(2(n_1 - 1) + l_1 + 3/2\right)\hbar\omega$$

$$V_0 + E_{n_2 l_2} = \left(2(n_2 - 1) + l_2 + 3/2\right)\hbar\omega$$

$$\frac{V_0 + E_{n_1 l_1}}{V_0 + E_{n_2 l_2}} = \frac{2(n_1 - 1) + l_1 + 3/2}{2(n_2 - 1) + l_2 + 3/2} = K$$

$$V_0 + E_{n_1 l_1} = K\left(V_0 + E_{n_2 l_2}\right) \qquad (1 - K)V_0 = K E_{n_2 l_2} - E_{n_1 l_1}$$

$$V_0 = \frac{K E_{n_2 l_2} - E_{n_1 l_1}}{1 - K}$$