

14. (a) With Eq. 40-11, we compare the  $\psi_1^2$  and  $\psi_2^2$  graphs in Fig. 40-6. The former has a maximum at the center and the latter is zero there. Thus, the excitation of the system described in this problem implies the electron has become much less likely to be detected near the middle of the well.
- (b) Examining the  $0 \leq x \leq 25$  pm regions of those two graphs, we conclude that the excited state electron is somewhat more likely to be “near” (not “at”) a well wall. Eq. 40-13 supports this conclusion in the sense that there is more “area” under the curve of  $\psi_2^2$  in the  $0 \leq x \leq 25$  pm region than under the  $\psi_1^2$  curve for that region.