

77. For  $x > 20$  mm, the field due  $i_2$  is downward and thus subtracts from  $B_1$  and is entirely consistent with the given expression for  $B_2$  (note that it becomes negative when  $x > d$ ). Similarly, for  $x < -20$  mm, the field due to  $i_1$  is downward and subtracts from  $B_2$  (which is positive and points upward for all  $x < d$ ). This again is consistent with the expression for  $B_1$  which is seen to become negative for  $x$  less than  $-d$  (that is,  $x$  negative and  $|x| > |d|$ ). We conclude that the given expressions are valid over the whole of the  $x$  axis, and their answer (Eq. 30-33) holds for all  $x$  (other than at the locations of the wires themselves, where it becomes problematic, as discussed in the Sample Problem).