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| ch02-29.jpg | **Problem 2.30**  A hoist trolley is subjected to the three forces shown. Knowing that *P* = 250 lb, determine (*a*) the required value of *α* if the resultant of the three forces is to be vertical, (*b*) the corresponding magnitude of the resultant. |

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| **Solution**  arrow  (1)  arr9  (*a*) For **R** to be vertical, we must have  Set  in Eq. (1)      Using the quadratic formula to solve for the roots gives    or     (*b*) Since **R** is to be vertical:   |