

63. (a) Eq. 30-19 applies for each wire, with $r = \sqrt{R^2 + (d/2)^2}$ (by the Pythagorean theorem). The vertical components of the fields cancel, and the two (identical) horizontal components add to yield the final result

$$B = 2 \left(\frac{\mu_0 i}{2\pi r} \right) \left(\frac{d/2}{r} \right) = \frac{\mu_0 i d}{2\pi (R^2 + (d/2)^2)}$$

where $(d/2)/r$ is a trigonometric factor to select the horizontal component. It is clear that this is equivalent to the expression in the problem statement.

- (b) Using the right-hand rule, we find both horizontal components point rightward.