

22. Since they carry current in the same direction, then (by the right-hand rule) the only region in which their fields might cancel is between them. Thus, if the point at which we are evaluating their field is  $r$  away from the wire carrying current  $i$  and is  $d - r$  away from the wire carrying current  $3i$ , then the canceling of their fields leads to

$$\frac{\mu_0 i}{2\pi r} = \frac{\mu_0 (3i)}{2\pi (d - r)} \implies r = \frac{d}{4} .$$