

6. (a) Recalling the *straight sections* discussion in Sample Problem 29-1, we see that the current in the straight segments collinear with  $C$  do not contribute to the field at that point.

Eq. 29-9 (with  $\phi = \pi$ ) indicates that the current in the semicircular arc contributes  $\mu_0 i / 4R$  to the field at  $C$ . Thus, the magnitude of the magnetic field is

$$B = \frac{\mu_0 i}{4R} = \frac{(4\pi \times 10^{-7} \text{ T} \cdot \text{m/A})(0.0348 \text{ A})}{4(0.0926 \text{ m})} = 1.18 \times 10^{-7} \text{ T}.$$

(b) The right-hand rule shows that this field is into the page.