

59. The fact that it is inverted implies  $m < 0$ . Therefore, with  $m = -1/2$ , we have  $i = p/2$ , which we substitute into Eq. 35-4:

$$\begin{aligned}\frac{1}{p} + \frac{1}{i} &= \frac{1}{f} \\ \frac{1}{p} + \frac{2}{p} &= \frac{1}{f} \\ \frac{3}{30.0} &= \frac{1}{f}\end{aligned}$$

with the unit cm understood. Consequently, we find  $f = 30/3 = 10.0$  cm. The fact that  $f > 0$  implies the mirror is concave.