

90. We use the result obtained in problem 51:

$$n = \frac{\sin \frac{1}{2}(\phi + \psi)}{\sin \frac{1}{2}\phi} = \frac{\sin \left[ \frac{1}{2}(60.0^\circ + 30.0^\circ) \right]}{\sin \left[ \frac{1}{2}(60.0^\circ) \right]} = 1.41 \text{ .}$$