**Problem 9.35** Choose \((d/\lambda)\) so that the array pattern of the array of Problem 9.34 has a null, rather than a maximum, at \(\theta = 45^\circ\).

**Solution:** With \(a_0 = a_1 = 1\) and \(\psi_0 = \psi_1 = 0\),

\[
F_a(\theta) = |1 + e^{j(2\pi d/\lambda)\cos \theta}|^2 = 4\cos^2 \left(\frac{\pi d}{\lambda} \cos \theta\right).
\]

\(F_a(\theta)\) is equal to zero when the argument of the cosine function is \([(\pi/2) + n\pi]\). Hence, for a null at \(\theta = 45^\circ\),

\[
\frac{\pi d}{\lambda} \cos 45^\circ = \frac{\pi}{2} + n\pi, \quad n = 0, 1, 2, \ldots.
\]

For \(n = 0\),

\[
\frac{d}{\lambda} = \frac{1}{2 \cos 45^\circ} = 0.707.
\]