74. The central diffraction envelope spans the range $-\theta_1 < \theta < +\theta_1$ where

$$\theta_1 = \sin^{-1}\frac{\lambda}{a} \ .$$

The maxima in the double-slit pattern are at

$$\theta_m = \sin^{-1}\frac{m\lambda}{d} \ ,$$

so that our range specification becomes

$$-\sin^{-1}\frac{\lambda}{a} \ < \ \sin^{-1}\frac{m\lambda}{d} < \ +\sin^{-1}\frac{\lambda}{a} \ ,$$

which we change (since sine is a monotonically increasing function in the fourth and first quadrants, where all these angles lie) to

$$-\frac{\lambda}{a} \ < \ \frac{m\lambda}{d} \ < \ +\frac{\lambda}{a} \ .$$

Rewriting this as $-d/a < m < +d/a$ we arrive at the result $m_{\max} < d/a \leq m_{\max} + 1$. Due to the symmetry of the pattern, the multiplicity of the m values is $2m_{\max} + 1 = 17$ so that $m_{\max} = 8$, and the result becomes

$$8 < \frac{d}{a} \leq 9$$

where these numbers are as accurate as the experiment allows (that is, "9" means "9.000" if our measurements are that good).