

17. Interference maxima occur at angles θ such that $d \sin \theta = m\lambda$, where m is an integer. Since $d = 2.0 \text{ m}$ and $\lambda = 0.50 \text{ m}$, this means that $\sin \theta = 0.25m$. We want all values of m (positive and negative) for which $|0.25m| \leq 1$. These are $-4, -3, -2, -1, 0, +1, +2, +3$, and $+4$. For each of these except -4 and $+4$, there are two different values for θ . A single value of θ (-90°) is associated with $m = -4$ and a single value ($+90^\circ$) is associated with $m = +4$. There are sixteen different angles in all and, therefore, sixteen maxima.