Problem Set 5
Physics 266 Second Semester, AY 2024-2025
10 points per number Due: 30 May 2025 (Friday)

1. Fraunhofer diffraction pattern by an annular aperture (Section 8.6.2, Born & Wolf). Generate the I/I_0 versus *kaw* plot (Equation 26) where $0 \leq kaw \leq 10$ (512 data points) for $\varepsilon = 0$, 0.5, 0.75 and 0.99 and wavelength $\lambda = 550$ nm.

2. Plot area of central spot versus ε for: $0 \leq \varepsilon$ (micron) ≤ 0.99 (512 data points).

3. Plot I_0 versus ε for: $0 \leq \varepsilon$ (micron) ≤ 0.99 (512 data points).

4. Plot the central spot area (in micron-squared units) versus λ for $\varepsilon = 0.99$ where: $400 \leq \lambda$(nm) ≤ 1000 (512 data points).

5. Plot I_0 (in relative units) versus λ for $\varepsilon = 0.99$ where: $400 \leq \lambda$(nm) ≤ 1000 (512 data points).

6. Plot the depth-of-field (in nm units) versus λ for $\varepsilon = 0.99$ where: $400 \leq \lambda$(nm) ≤ 1000 (512 data points).

END