Brief Answers to Critical Thinking Questions from Lecture 3

1. \( \lambda = \frac{2\pi r}{j} \)

2. \( E = \frac{\hbar^2 j^2}{8\pi^2 m^2 r^2} = \frac{\hbar^2 j^2}{2mr^2} \)

   (\( \hbar \) is often used to simplify equations. It is the ‘reduced Planck’s constant’: \( \hbar = h / 2\pi \).)

3. When \( m \) or \( r \) become large, the separation between the energy levels decreases. In the limit, the quantization of the energies disappears completely.

4. \( \frac{d^2\psi}{d\theta^2} = -j^2 \cos(j\theta) \)

5. The last solution ends up being zero and is not useful.