6.1a) $a_n = e^{(i\mu_n z)}$

$$\frac{d^3 a_n}{dz^3} = -i\mu_n^3 e^{(i\mu_n z)}$$

6.11: $$\boxed{-i\mu_n^3 e^{(i\mu_n z)} - \frac{ih[JJ]_n^2}{[JJ]_1^2} e^{(i\mu_n z)} = 0}$$

6.1 b) $$-ie^{(i\mu_n z)}\left[\mu_n^3 - \frac{h[JJ]_1^2}{[JJ]_1^2}\right] = 0$$

$$\mu_n^3 = \frac{h[JJ]_n^2}{[JJ]_1}$$

$$\mu_n = \left(\frac{h[JJ]_n^2}{[JJ]_1^2}\right)^{1/3}$$

6.1 c) i)

$$\lambda_t = \frac{1+K_1^2/2}{2\gamma}\lambda_u \qquad \lambda_t = \frac{1+K_3^2/2}{2\gamma}\lambda_u/3$$

$$\frac{\lambda_t}{\lambda_u}(2\gamma) = 1 + K_1^2/2 \qquad \frac{(6\gamma)\lambda_t}{\lambda_u} = 1 + K_3^2/2$$

$$\frac{4\gamma\lambda_t}{\lambda_u} = 1 + K_1^2 \qquad 3\left(\frac{4\gamma\lambda}{\lambda_t}\right) = 2 + K_3^2$$

$$3(1+K_1^2) = 2 + K_3^2$$

$$K_3^2 = 3(1+K_1^2) - 2$$

$$K_3 = \sqrt{3(1+K_1^2)-2}$$