

<p>Kingdom of Saudi Arabia  Ministry of Higher Education  <b>KING SAUD UNIVERSITY</b>  <i>Deanship of Scientific Research</i>  College of Science Research Center</p>		<p>جامعة الملك سعود</p>
---	---	-------------------------

316 (1430-1429)

$$\alpha \leq 0, \beta \geq 0 : \quad (*) \quad \begin{cases} (ru')' + p(x)u + \lambda u = 0 \\ u'(a) - \alpha u(a) = 0 \\ u'(b) - \beta u(b) = 0 \end{cases} \quad :$$

$$\lambda \int_a^b f^2 dx - \int_a^b r f'^2 dx = - \int_a^b p(x) f^2 dx + \beta r(b) f^2(b) - \alpha r(a) f^2(a)$$

$$\lambda \geq -C \quad (*) \quad x \in \mathbb{R} \quad p(x) \leq C \quad ($$

$$xJ'_\nu(x) + J_\nu(x) = xJ_{\nu-1}(x) : \quad ($$

$$\frac{d}{dx}(x^\nu J_\nu(x)) = x^\nu J_{\nu-1}(x) : \quad ($$

$$\int_0^x r J_0(r) dr = xJ_1(x) : \quad ($$

$$\begin{cases} u'' + \lambda u = 0 \\ u(0) = 0, u(\pi) = 0 \end{cases} :$$

$$\int_0^\pi u_n^2 dx = 1 \quad ($$

$$. [0, \pi] \quad u'(0) = 0 : \quad u(0) = 0 : \quad ($$

$$f(x + \pi) = f(x) : \quad f(x) = \begin{cases} |\sin x|, & |x| \leq \pi \\ 0, & |x| > \pi \end{cases} \quad ($$

$$\int_0^\infty \frac{\cos(\pi\xi)+1}{1-\xi^2} \cos(\pi\xi) d\xi = \frac{\pi}{2} :$$

$$3xy'' + (2-x)y' - y = 0 : \quad ($$

$$f(x) = \begin{cases} 3, & x < 2 \\ 1, & 2 < x < 5 \\ x, & 5 < x < 8 \\ \frac{x^2}{10}, & x > 8 \end{cases} :$$

$$y(0) = 0 \quad y' + y = \begin{cases} 0, & 0 < x < \pi \\ 3\cos x, & x \geq \pi \end{cases} :$$

$$y(x) \quad \begin{cases} y'' + xy = 0 \\ y(0) = 1, \quad y'(0) = 0 \\ Y'(s) = s^2 Y(s) - s \end{cases} :$$