be sufficient to establish that \( \lim_{n \to \infty} f_n(x) = f_0(x) \) at every point \( x \) on \([0, p]\). The theorem follows immediately then from §5.1 and the fact that

\[
f_n(x) = F^{-1}_n \left( \left[ x \right]/p + F_n(x - \left[ x \right])/p \right), \quad 0 \leq x \leq p, \quad n = 0, 1, \ldots,
\]

Theorem 5 establishes the continuity of \( T \) from \( E_p \) onto \( E_p^* \).

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THE NONLINEAR DIFFERENTIAL EQUATION

\[ y'' + p(x)y + cy^{-3} = 0 \]

EDMUND PINNEY

Among the limited number of nonlinear differential equations whose exact solutions are known is to be included

(1) \[ y''(x) + p(x)y(x) + c/y^3(x) = 0, \]

for \( c \) constant and \( p(x) \) given. The general solution for which \( y(x_0) = y_0 \neq 0, \quad y'(x_0) = y'_0 \) is

(2) \[ y(x) = \left[ u^2(x) - cW^{-2}v^2(x) \right]^{1/2}, \]

where \( u, v \) form a fundamental set of solutions of the linear equation

(3) \[ y''(x) + p(x)y(x) = 0, \]

for which \( u(x_0) = y_0, \quad u'(x_0) = y'_0, \quad v(x_0) = 0, \quad v'(x_0) \neq 0, \) where \( W \) is their Wronskian: \( W = uv' - u'v = \text{const.} \neq 0, \) and where the radical in (2) stands for that root which at \( x_0 \) has the value \( y_0 \).

The proof is very simple and will be omitted.

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