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BILINEAR CONCOMITANT AND GREEN'S FORMULA ASSOCIATED WITH A MATRIX DIFFERENTIAL OPERATOR

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Abstract: In this paper, we have considered a matrix differential operator and the corresponding eigenvalue problem. The bilinear concomitant for the problem has been obtained. After this, the Lagrange's Identity and the Green's Formula has been derived.

Keywords and Phrases: Matrix differential operator, eigenvalue, bilinear concomitant, Lagrange's Identity, Green's Formula.

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1. Introduction

The differential equation, which is considered in the problem, is given below,

$$-\frac{d}{dx}\left(P_0\frac{du}{dx}\right)+pu+rv=\lambda(F_{11}u+F_{12}v)$$

$$i\frac{dv}{dx}+qv+ru=-\lambda(F_{21}u+F_{22}v) \tag{1}$$

where,

(i) P_0 is a real valued function of u, having continuous derivatives of the first order in $a \leq x \leq b$.

(ii) p, q, r are all real valued function of u continuous in $a \leq x \leq s$.