

MATH2214 - Fall 03- Review For Test 3 - Konaté

Notice: Show your work. A right answer with a bad reasoning will be considered as wrong. No notebook, no calculator allowed. Abstracts are allowed.

- 1• Express the given complex number in the form $R(\cos \theta + i \sin \theta)$
- 2• Find the general solution of $y^{(4)} + 2y'' + y = 0$.
- 3• Find the solution of $y^{(4)} + 2y'' + y = 0$. $y(0) = y'(0) = 0$, $y''(0) = y^{(3)}(0) = 1$
- 4• Set up the general solution of the differential equation (do not compute the coefficients) $y'' - 6y' + 13y = te^{3x} \sin 2x$
- 5• Show the given vector is solution to the given differential equation $X = \begin{pmatrix} 1 \\ 0 \end{pmatrix} e^t + 2 \begin{pmatrix} 1 \\ 1 \end{pmatrix} te^t$; $X' = \begin{pmatrix} 2 & -1 \\ 3 & -2 \end{pmatrix} X + \begin{pmatrix} 1 \\ -1 \end{pmatrix} e^t$
- 6• Transform the differential equation into an equivalent system of first order differential equations $y^{(3)} + ty'' - 4y = \cos t$
- 7• Consider the matrice:

$$A = \begin{pmatrix} 1 + i & -1 + 2i \\ 3 + 2i & 2 - i \end{pmatrix}$$

Find A^T , \overline{A} , A^* .

- 8• Find the general solution of the system of first order differential equation:

$$X' = \begin{pmatrix} -2 & \frac{1}{2} \\ 12 & -1 \end{pmatrix} X.$$

- 9• Find the general solution of the system of first order differential equation:

$$X' = \begin{pmatrix} -1 & -\frac{1}{4} \\ 4 & -1 \end{pmatrix} X.$$

- 10• Find the general solution of the system of first order differential equation:

$$X' = \begin{pmatrix} -1 & 2 \\ -\frac{1}{2} & -3 \end{pmatrix} X.$$
