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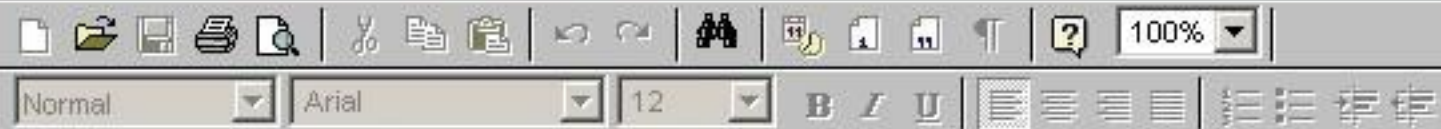
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Determine whether the set of vectors are orthogonal or not.

$$\begin{bmatrix} 5 \\ -4 \\ 0 \end{bmatrix}, \begin{bmatrix} -4 \\ 1 \\ -3 \end{bmatrix}, \begin{bmatrix} 3 \\ 3 \\ 5 \end{bmatrix}$$

Answer ([Please click here to Add Answer](#))

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$$\begin{bmatrix} 5 \\ -4 \\ 0 \\ 3 \end{bmatrix}, \begin{bmatrix} -4 \\ 1 \\ -3 \\ 8 \end{bmatrix}, \begin{bmatrix} 3 \\ 3 \\ 5 \\ 1 \end{bmatrix}$$

Answer ([Please click here to Add Answer](#))

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Is the following set of vectors is orthogonal with respect to the Euclidean inner product on \mathbb{R}^3 ?

$$\left(\frac{1}{\sqrt{6}}, \frac{1}{\sqrt{6}}, -\frac{2}{\sqrt{6}} \right), \left(\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}, 0 \right)$$

Answer ([Please click here to Add Answer](#))

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If a matrix $A = \begin{bmatrix} 1 & 4 & 5 \\ 4 & 5 & 6 \\ 7 & 8 & 8 \end{bmatrix}$ and $\det(A^t) = 6$, then find the determinant of the matrix .

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Answer ([Please click here to Add Answer](#))



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Let $B = \{ b_1, b_2, b_3 \}$ and $D = \{ d_1, d_2 \}$ be bases for vector spaces V and W , respectively. Let $T : V \rightarrow W$ be a linear transformation with the property that $T(b_1) = 3d_1 - 5d_2$, $T(b_2) = -d_1 + 6d_2$ and $T(b_3) = 4d_2$. Find a matrix M for T relative to B and D .

Answer ([Please click here to Add Answer](#))

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Determine whether the vectors $y = \begin{bmatrix} -3 \\ 7 \\ 4 \\ 0 \end{bmatrix}$, $z = \begin{bmatrix} 1 \\ -8 \\ 15 \\ -7 \end{bmatrix}$ are orthogonal.

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Answer ([Please click here to Add Answer](#))



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Let $W = \text{Span} \{x_1, x_2\}$, where $x_1 = \begin{bmatrix} 3 \\ 0 \\ -1 \end{bmatrix}$, $x_2 = \begin{bmatrix} 8 \\ 5 \\ -6 \end{bmatrix}$. Construct an orthogonal basis $\{v_1, v_2\}$ for W .

Answer ([Please click here to Add Answer](#))

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If $A = \begin{pmatrix} 1 & 2 \\ 2 & 1 \end{pmatrix}$ then find an invertible matrix P such that $P^{-1}AP = D$ (diagonal matrix)

Answer ([Please click here to Add Answer](#))

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Let $\vec{v}_1 = \begin{bmatrix} 1 \\ 0 \\ -2 \end{bmatrix}$, $\vec{v}_2 = \begin{bmatrix} -2 \\ 1 \\ 7 \end{bmatrix}$ and $\vec{y} = \begin{bmatrix} h \\ -3 \\ -5 \end{bmatrix}$. For what value(s) of 'h' is \vec{y} in the plane generated by \vec{v}_1 and \vec{v}_2 ?

Answer ([Please click here to Add Answer](#))

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Compute the least square error associated with the least square solution $\hat{x} = \begin{bmatrix} 4 \\ 3 \\ -1 \\ 3 \end{bmatrix}$ of the equation $Ax = b$ where $A = \begin{bmatrix} 1 & -2 \\ -1 & 2 \\ 0 & 3 \\ 2 & 5 \end{bmatrix}$, $b = \begin{bmatrix} 3 \\ 1 \\ -4 \\ 2 \end{bmatrix}$

Answer ([Please click here to Add Answer](#))

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Find the dominant Eigen pair (i.e. the Eigen value and Eigen vector) by using the Power Method for the following matrix. (Perform only 1 iteration)

$$A = \begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}, \quad x_0 = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$

Answer ([Please click here to Add Answer](#))

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Find A^2 , given that $A = PDP^{-1}$, where P and D are given below $A = \begin{pmatrix} 2 & 6 \\ -4 & 12 \end{pmatrix}$, $P = \begin{pmatrix} 3 & 1 \\ 2 & 1 \end{pmatrix}$, $D = \begin{pmatrix} 6 & 0 \\ 0 & 8 \end{pmatrix}$, $P^{-1} = \begin{pmatrix} 1 & -1 \\ -2 & 3 \end{pmatrix}$

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Let $A = \begin{bmatrix} 1 & 4 \\ 5 & 6 \end{bmatrix}$ and $\vec{c} = \begin{bmatrix} 2 \\ 3 \end{bmatrix}$. Define $T: \mathbb{R}^2 \rightarrow \mathbb{R}^2$ by $T(\vec{x}) = A\vec{x}$. Determine if \vec{c} is in the range of the transformation T .

Answer ([Please click here to Add Answer](#))

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Determine whether the set of vectors are orthogonal or not.

$$\begin{bmatrix} 5 \\ -4 \\ 0 \end{bmatrix}, \begin{bmatrix} -4 \\ 1 \\ -3 \end{bmatrix}, \begin{bmatrix} 3 \\ 3 \\ 5 \end{bmatrix}$$

Answer ([Please click here to Add Answer](#))

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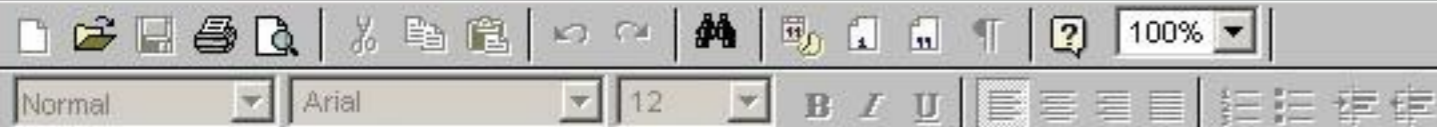


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$$\begin{bmatrix} 5 \\ -4 \\ 0 \\ 3 \end{bmatrix}, \begin{bmatrix} -4 \\ 1 \\ -3 \\ 8 \end{bmatrix}, \begin{bmatrix} 3 \\ 3 \\ 5 \\ 1 \end{bmatrix}$$

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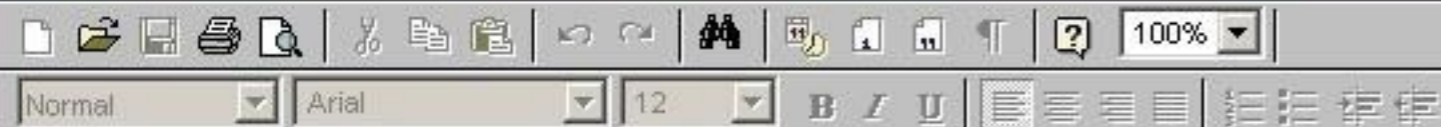


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Answer (Please [click here](#) to Add Answer)



correct answer solved by Hadi
Email : usmanraj20@gmail.com
Cell : 03228043306

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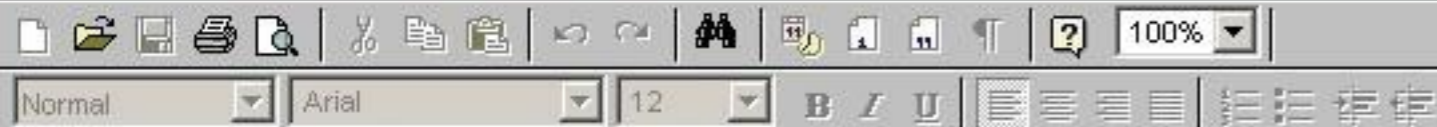
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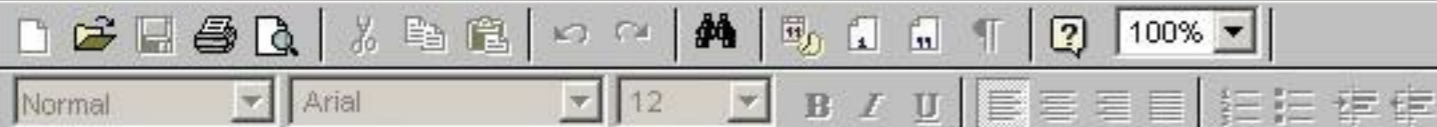


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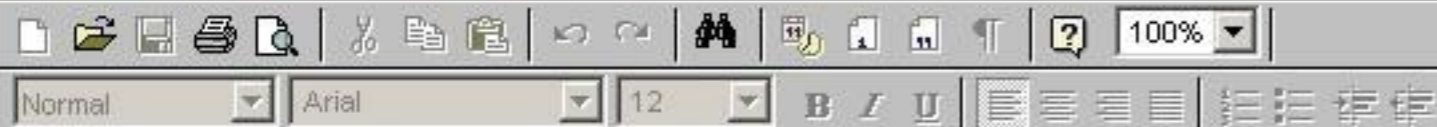


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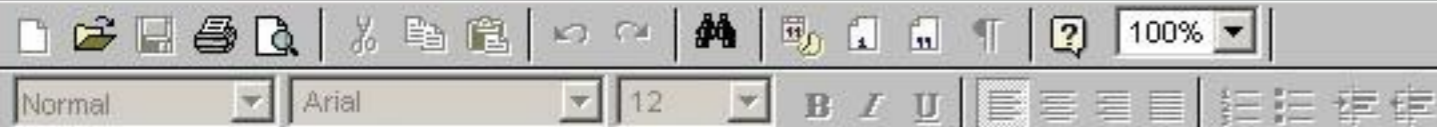


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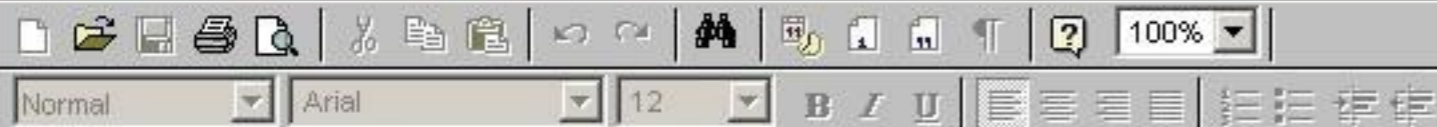


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