Marks: 2 (Budgeted Time 4 Min)

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)

Normal | Arial | 12 | 100%

Question No : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

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

Answer (Please click here to Add Answer)

Normal Arial 12 100%

Question No : 42 of 52 Marks: 2 (Budgeted Time 4 Min)

Is the following set of vectors is orthogonal with respect to the Euclidean inner product on ¡ [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)

Normal Arial 12 100%

Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

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.

Answer (Please click here to Add Answer)

Normal Arial 12 100%

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)

Normal Arial 12 100%

 Marks: 3 (Budgeted Time 6 Min)

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

Answer (Please click here to Add Answer)

Normal Arial 12 100%

Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Let W = 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)

Normal Arial 12 100%

Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

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)

Normal Arial 12 100%

 Marks: 3 (Budgeted Time 6 Min)

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)

Normal Arial 12 100%

 Marks: 5 (Budgeted Time 10 Min)

Compute the least square error associated with the least square solution $\hat{x} = \begin{bmatrix} \frac{4}{3} \\ \frac{-1}{3} \end{bmatrix}$ 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)

Normal Arial 12 100%

Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

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)

Normal Arial 12 100%

Question No : 51 of 52 Marks: 5 (Budgeted Time 10 Min)

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

Answer (Please click here to Add Answer)

Normal Arial 12 100%

Question No : 52 of 52 Marks: 5 (Budgeted Time 10 Min)

Let $A=\begin{bmatrix}1 & 4\\5 & 6\end{bmatrix}$ and $\vec{c}=\begin{bmatrix}2\\3\end{bmatrix}$. Define $T: R^2 \to R^2$ 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)

Normal Arial 12 100%

Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

Determine whether the set of vectors are orthogonal or not.

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

Answer (Please click here to Add Answer)

Normal Arial 12 100%

Question No : 41 of 52 Marks: 2 (Budgeted Time 4 Min)

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

Answer (Please click here to Add Answer)

Normal Arial 12 100%

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

Answer (Please click here to Add Answer)

Normal Arial 12 100%

Question No : 43 of 52 Marks: 2 (Budgeted Time 4 Min)

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 .

Answer (Please click here to Add Answer)

Normal Arial 12 100%

correct answer solved by Hadi

Email : usmanraj20@gmail.com
Cell : 03228043306

Question No : 44 of 52 Marks: 2 (Budgeted Time 4 Min)

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)

Normal Arial 12 100%

 Marks: 3 (Budgeted Time 6 Min)

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

Answer (Please click here to Add Answer)

Normal Arial 12 100%

Question No : 46 of 52 Marks: 3 (Budgeted Time 6 Min)

Let W = 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)

Normal Arial 12 100%

Question No : 47 of 52 Marks: 3 (Budgeted Time 6 Min)

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)

Normal Arial 12 100%

Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

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)

Normal Arial 12 100%

 Marks: 5 (Budgeted Time 10 Min)

Compute the least square error associated with the least square solution $\hat{x} = \begin{bmatrix} \frac{4}{3} \\ \frac{-1}{3} \end{bmatrix}$ 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)

Normal Arial 12 100%

Question No : 50 of 52 Marks: 5 (Budgeted Time 10 Min)

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Answer (Please click here to Add Answer)

Normal Arial 12 100%

 Marks: 5 (Budgeted Time 10 Min)

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

Answer (Please click here to Add Answer)

Normal Arial 12 100%