Course	Thing	Explanation	Date	Important	Index
MA2001	Homogeneous	Constant terms are all 0	17/08/2021		30
MA2001	Gauss-Jordan	Used to make RREF	17/08/2021		31
MA2001	Scalar matrix	Diagonal matrix, with all diagonal same	17/08/2021		32
MA2001	Order n matrix	Square matrix nxn	17/08/2021		33
MA2001	Symmetric matrix	Top right = bottom left	17/08/2021		34
MA2001	Upper/lower triangular matrix	Top right or bottom left	17/08/2021		35
MA2001	Elementary row vs column operation	ERO has to be premultiplied, while ECO had to be postmultiplied	24/08/2021		79
MA2001	Cofactor	The 2x2 matrices that are used when calculating determinant of 3x3 matrices	24/08/2021		80
MA2001	Diagonal matrix determinant	Equal to product of diagonal entries	24/08/2021		81
MA2001	det(A) = kdet(B)	If rows are multiplied when ERO-ing from A to B	31/08/2021		116
MA2001	det(A) = -det(B)	If rows are swapped when ERO-ing from A to B	31/08/2021		117
MA2001	$\det(A^{-1}) = 1/\det(A)$	Inverse is the inverse	31/08/2021		118
MA2001	$\det(cA) = c^n\det(A)$	Need to power the scalar by the dimension of the matrix	31/08/2021	Important	119
MA2001	adj(A)	The adjoint of A is the matrix made up of cofactors of the elements, so it's full of matrices inside	31/08/2021		120
MA2001	Aadj(A) = det(A)I	Based on how it's defined	31/08/2021		121
MA2001	Cramer's rule	Take a linear system and swap the solution vector with the A columns to get A_1, A_2 and A_3; Then, $x = \det(A_1)/\det(A)$, $y = \det(A_2)/\det(A)$, $z = \det(A_3)/\det(A)$	31/08/2021		122
MA2001	S = {(u_1,u_2,u_3,u4)|conditions}	How to write linear space	31/08/2021		123
MA2001	S = {(t,t,t)|t in R}	Explicit form is in parametric form	31/08/2021		124
MA2001	S = {(x,y,z)|x+y+z=0}	Implicit form is in equation form	31/08/2021		125
MA2001	Linear Combination	Can be derived from the augmented matrix and elimination	06/09/2021		155
MA2001	Linear Span Notation	span{(1,2,3),(3,4,5)}	06/09/2021		156
MA2001	Set Notation for Linear Span	{s(1,2,3)+t(3,4,5)|s,t is elem of R}	06/09/2021		157
MA2001	Show span(A) = span(B)	Augmented matrix with A on the left and each spanning vector of B; Conduct GEJ; If consistent throughout, then B ⊆ A; Repeat for the other way	06/09/2021		158
MA2001	S ⊆ Span(S) ⊆ R	The spanning egg	10/09/2021		177
MA2001	Linear dependent	0 vector makes any space linearly dependent, as you can add non-zero zero vector to any vector to return itself; number of vectors in space > dimension, then linearly dependent	15/09/2021		193
MA2001	Zero space	Zero space is linearly dependent, and has empty set as basis	16/09/2021		202
MA2001	span(S1) ⊆ span(S2)	each ui is a linear combination of v1, v2, …, vm	20/09/2021	Important	202.5
MA2001	Useful spanning	u, v and w in $\mathbb{R}^3$ are linearly independent if and only if span{u, v, w} = $\mathbb{R}^3$; In $\mathbb{R}^3$, three vectors u, v and w are linearly dependent if and only if they lie on the same line or same plane.	23/09/2021		209
MA2001	Dimension	Dimension of solution space = Number of vectors in basis for solution space = Number of parameters in general solution = Number of non-pivot columns in REF	01/10/2021		217
MA2001	Transition matrix [w]s	Basis S to basis T, means you express each S as a linear combination of each T; Use GJE	01/10/2021		218
MA2001	Definition 1.2.6 (Row equivalent linear systems)	Two augmented matrices are row equivalent if one can be obtained by a series of ERO	01/10/2021		219
MA2001	Theorem 1.2.7 (Row equivalent linear systems)	If the augmented matrices of two linear systems are row equivalent, then the two systems have the same set of solutions	01/10/2021		220
MA2001	Definition 1.3.1 (REF)	An augmented matrix is in REF if it: 1. If there are any rows that consist entirely of zeros, then they are grouped together at the bottom of the matrix. 2. In any two successive non-zero rows, the first nonzero number in the lower row occurs farther to the right than the first nonzero number in the higher row. An augmented matrix is in RREF if it: 3. The leading entry of every nonzero row is 1 4. In each pivot column, except the pivot point, all other entries are zeros.	01/10/2021		221
MA2001	Remark 1.4.8.2	Consistent linear system has one solution if #variables = #nonzero rows in REF	01/10/2021		222
MA2001	Remark 1.4.8.3	Consistent linear system has infinite solutions if there is a non-pivot column in REF other than the last column; Consistent linear system has infinite solutions if #variables > #nonzero rows in REF	01/10/2021		223
MA2001	Definition 1.5.1 (Infinite solutions of linear system)	Consistent linear system has infinite solutions if #variables > #nonzero rows in REF	01/10/2021		224
MA2001	Remark 2.2.21	Square matrix is symmetric if $A = A^T$	01/10/2021		225
MA2001	Definition 2.3.2 (Invertibility of square matrix)	Square matrix is invertible if ∃ square matrix B st AB = I	01/10/2021		227
MA2001	Theorem 2.3.5 (Uniqueness of inverse)	Every invertible matrix has only one inverse	01/10/2021		228
MA2001	Subspace addition	V + W means take some v in V and some w in W, leading to v + w	01/10/2021		229
MA2001	Theorem 2.5.6 (Determinant cofactor)	Determinant can be expresed as value with cofactor	02/10/2021		231
MA2001	Theorem 2.5.8 (Determinant of triangle)	Determinant of triangular matrix is the product of the diagonals	02/10/2021		232

Course	Thing	Explanation	Date	Important	Index
MA2001	Theorem 2.5.10 (Determinant of transpose)	$\det(A) = \det(A^T)$	02/10/2021		233
MA2001	Theorem 2.5.12 (Determinant of equal columns or rows)	Determinant of matrix with identical rows or columns is zero	02/10/2021		234
MA2001	Theorem 2.5.25 (Inverse using adjoint)	$A^{-1} = \text{adj}(A)/\det(A)$; adj(A) is a matrix containing the determinants of the cofactors	02/10/2021	Important	235
MA2001	Theorem 2.5.27 (Cramer's rule)	solution = ($\det A_1$, $\det A_2$, $\det A_3$...) / det(A); $\det A_1$is the first column replaced by the result	03/10/2021		236
MA2001	Definition 3.1.7 ($\mathbb{R}^n$)	Set of all n-vectors is $\mathbb{R}^n$	03/10/2021		237
MA2001	Theorem 3.2.7 (Spannability)	If number of spanning vectors < n, then it cannot span	03/10/2021		238
MA2001	Theorem 3.4.7 (Spannability)	If number of spanning vectors > n, then it is linearly dependent, and has non-trivial solutions	03/10/2021		238.5
MA2001	Theorem 3.2.10 (Subset of subspace)	$\text{span}(S_1) \subseteq \text{span}(S_2)$ iff each in S_1 is in $\text{span}(S_2)$	03/10/2021		239
MA2001	Theorem 3.2.12 (Union of subspace)	If $u \in \text{span}(S)$, then $\text{span}(S) = \text{span}(S \cup u)$	03/10/2021		240
MA2001	Theorem 3.3.6 (Subspace solution)	Solution set of a homogenous system is a subspace	03/10/2021		241
MA2001	Definition 3.4.2.1 (Linearly independent)	If $\sum cu = 0$ only has the trivial solution, then the vectors are linearly independent	03/10/2021		242
MA2001	Theorem 3.4.4.1 (Redundant vector)	If there is at least one vector that is a linear combination of the rest, then that is a redundant vector	03/10/2021		243
MA2001	Theorem 3.4.10 (Linearly independent)	Vectors are linearly independent if u_{k+1} is not a linear combination of the rest	03/10/2021		244
MA2001	Theorem 3.5.7 (Vectors in vector space)	Every vector in a space can be expressed by the basis vectors in exactly one way	03/10/2021		245
MA2001	Theorem 3.5.11 (Linearly independent basis)	S is a basis for V, $\|S\| = k$; v in V are linearly dependent iff $(v)_S$ are linearly dependent in $\mathbb{R}^k$; $\text{span}(S) = V$ iff $\text{span}((v)_S) = \mathbb{R}^k$;	04/10/2021		247
MA2001	Theorem 3.6.1 (Linearly independent span)	Any subset of V with more than k vectors is always linearly dependent; Any subset of V with less than k vectors cannot span V	04/10/2021		248
MA2001	Theorem 3.6.7 (Basis)	S is a basis for V $\Leftrightarrow$ S is linearly independent and $\|S\| = k = \dim(V)$ $\Leftrightarrow$ $S \subseteq V$ and $\|S\| = k = \dim(V)$	04/10/2021	Important	249
MA2001	Theorem 3.6.9 (Subspace)	If U is a subspace of V; $\dim(U) = \dim(V) \Leftrightarrow U = V$; $U \subseteq V \Leftrightarrow \dim(U) \leq \dim(V)$; $U \subseteq V \wedge U \neq V \Leftrightarrow \dim(U) < \dim(V)$	04/10/2021	Important	250
MA2001	Theorem 3.6.11 (Invertible)	A is invertible $\Leftrightarrow$ A is non-singular $\Leftrightarrow$ $Ax = 0$ only has trivial solution $\Leftrightarrow$ RREF(A) = I $\Leftrightarrow$ REF no non-zero rows $\Leftrightarrow$ A can be expressed as product of elementary matrices of another invertible matrix $\Leftrightarrow$ $\det(A) \neq 0$ $\Leftrightarrow$ $\exists$ square matrix B such that BA = I $\Leftrightarrow$ Rows of A form a basis for $\mathbb{R}^n$ $\Leftrightarrow$ Columns of A form a basis for $\mathbb{R}^n$ $\Leftrightarrow$ row / column space = $\mathbb{R}^n$ $\Leftrightarrow$ rank(A) = n $\Leftrightarrow$ nullity(A) = 0 $\Leftrightarrow$ 0 is not an eigenvalue of A $\Leftrightarrow$ Ker(T) = {0} $\Leftrightarrow$ R(T) = $\mathbb{R}^n$	04/10/2021	Simportant	251
MA2001	Notation 3.7.1 (Coordinate vector)	$(v)_S$ is the row form of coordinate vector; $[v]_S$ is the column form of coordinate vector; Coordinate vector means that v is made up of vectors in S	04/10/2021		252
MA2001	Definition 3.7.3 (Transition Matrix)	Finding transition matrix P from $S = \{u_1,..., u_k\}$ to $T = \{v_1,..., v_k\}$ $P = ([u_1]_T\ [u_2]_T\ ...\ [u_k]_T)$ aka expressing each vector in s as a linear combination of vectors in t; $P[w]_S = [w]_T$	04/10/2021	Important	253
MA2001	Find transition matrix	Set up augmented matrix ($v_1\ v_2\ v_3\ \|u_1\|u_2\|u_3$) $\rightarrow$ Do GJE to get ($I \mid [u_1]_T \mid [u_2]_T \mid [u_3]_T$) $\rightarrow$ $u_1 = av_1 + bv_2 + cv_3 \Longrightarrow [u_1]_T = (a\ b\ c)$	04/10/2021	Important	254
MA2001	Theorem 3.7.5 (Transition Matrix)	The transition matrix P from S to T: Is invertible; P^{-1} is the transition matrix from T to S	04/10/2021		255
MA2001	Definition 4.1.2 (Row Space)	It is the span of the rows	08/10/2021		292
MA2001	Definition 4.1.2 (Column Space)	It is the span of the columns	08/10/2021		293
MA2001	Theorem 4.1.7 (ERO preservation of row and column space)	A and B are row-equivalent $\Rightarrow$ row spaces are the same, but column spaces might not be the same	08/10/2021		294
MA2001	Theorem 4.1.11 (Linear independence of rows and columns)	A and B are row-equivalent $\Rightarrow$ linear independence of columns in A $\Leftrightarrow$ linear independence of columns in B $\Leftrightarrow$ linear relationship of between columns is conserved ($u_1 + u_2 = u_3$)	08/10/2021		295
MA2001	Find basis for linear span (Row space method)	Get the row space of the RREF	08/10/2021		296
MA2001	Find basis for linear span (Column space method)	See the pivot columns of the RREF, and match them with the original matrix, to get the basis in terms of the original columns	08/10/2021		297
MA2001	Find extension of set to a basis	Put the vectors as row space, then find the non-pivot columns of the RREF	08/10/2021	Important	298
MA2001	Solutions to Ax = b	b belongs to column space of A $\Rightarrow$ system has solutions; b doesn't belong $\Rightarrow$ system has no solution	08/10/2021		299
MA2001	Theorem 4.1.16 (Column space)	Ax = b is consistent iff b lies in the column space of A	08/10/2021		300

Course	Thing	Explanation	Date	Important	Index
MA2001	Rank	rank(A) = REF nonzero rows = REF leading entries = REF pivot columns = largest number of linearly independent rows = largest number of linearly independent columns = dim(rowspace) = dim(columnspace)	08/10/2021	Important	301
MA2001	Dimension Theorem of Matrix	rank(A) + nullity(A) = #columns of A	08/10/2021	Important	302
MA2001	Vector in column space	$Av \in$ column space of A	08/10/2021		303
MA2001	Column space of AB	colspace(AB) $\subseteq$ colspace(A)	08/10/2021		304
MA2001	Rank of AB	rank(AB) $\leq$ rank(A)	08/10/2021	Important	305
MA2001	Rank of A + B	rank(A + B) $\leq$ rank(A) + rank(B)	08/10/2021	Important	306
MA2001	Dimension of A + B	dim(A + B) = dim(A) + dim(B) - dim $(A \cap B) \leq n$	08/10/2021	Simportant	307
MA2001	Nullspace of A	Can be obtained by applying RREF to the augmented matrix Ax = 0	08/10/2021		308
MA2001	format long/format short	Converts values to decimal form	09/10/2021	Matlab	314
MA2001	format rat	Converts values to rational form	09/10/2021	Matlab	315
MA2001	[A b]	Concatenate vector b to matrix A	09/10/2021	Matlab	316
MA2001	rref()	Computes RREF form	09/10/2021	Matlab	317
MA2001	A(i,:)	Extract the ith row	09/10/2021	Matlab	318
MA2001	A([i,j],:)	Extract the ith and jth row	09/10/2021	Matlab	319
MA2001	size()	Size of matrix	09/10/2021	Matlab	320
MA2001	zeros(r,c)	Creates zero matrix of size rxc	09/10/2021	Matlab	321
MA2001	eye(n)	Creates identity matrix of size n	09/10/2021	Matlab	322
MA2001	diag([])	Creates diagonal matrix using a list as the entries	09/10/2021	Matlab	323
MA2001	A'	Transpose matrix	09/10/2021	Matlab	324
MA2001	A^(-1)	Inverse matrix	09/10/2021	Matlab	325
MA2001	inv()	Inverse matrix	09/10/2021	Matlab	326
MA2001	det()	Determinant of matrix	09/10/2021	Matlab	327
MA2001	syms s t	Creates 2 free parameters, to be used in general solutions	09/10/2021	Matlab	328
MA2001	rank()	Rank of matrix	09/10/2021	Matlab	329
MA2001	null(A, 'r')	Nullspace of matrix	09/10/2021	Matlab	330
MA2001	Full Rank	rank(A) = min{m, n} is full rank	14/10/2021	Important	355
MA2001	Matrix dimension	#rows × #columns	14/10/2021	Important	356
MA2001	Matrix coordinates	A_{12} means first row, second column	14/10/2021	Important	357
MA2001	Definition 5.1.2 (Distance)	Distance is just pythagoras' theorem extended	15/10/2021		358
MA2001	Definition 5.1.2 (Angle)	$\cos^{-1}(u \cdot v / \|\|u\|\|\|\|v\|\|)$	15/10/2021		359
MA2001	Theorem 5.2.4 (Orthogonal)	S is orthogonal set of nonzero vectors $\Rightarrow$ S is linearly independent	15/10/2021		360
MA2001	Definition 5.2.13 (Find orthogonal)	p is $\mathrm{proj}_V u \Rightarrow u - p$ is vector orthogonal to V	15/10/2021		362
MA2001	Theorem 5.2.15 (Find projection)	$S = \{u_1, u_2, ..., u_{□}\}$: orthogonal basis for V; $\mathrm{proj}_V w$: $p = (w \cdot u_1)u_1/\|\|u_1\|\|^2 + (w \cdot u_2)u_2/\|\|u_2\|\|^2 + ... + (w \cdot u_{□}) u_{□}/\|\|u_{□}\|\|^2$	15/10/2021	Important	363
MA2001	Theorem 5.2.15 (Prove projection)	Show p is projection of w onto V > Need to show w-p is orthogonal to each vector in V	02/11/2021	Important	363.5
MA2001	Theorem 5.2.8 (Projection in subspace)	$w \in V \Rightarrow \mathrm{proj}_V w$ is just w	15/10/2021		364
MA2001	Discussion 5.2.18.1 (Find orthogonal basis from basis)	For a basis $\{u_1, u_2\}$, find the projection of u_2 onto u_1, then $u_2 - p$ is the orthogonal; To add another vector u_3, apply the same operation to find projection, then $u_3 - p$;	15/10/2021		365
MA2001	Theorem 5.2.19 (Gram-Schmidt Process)	$v_1 = u_1$ $v_2 = u_2 - (u_2 \cdot v_1)v_1/\|\|v_1\|\|^2$ $v_3 = u_3 - (u_3 \cdot v_1)v_1/\|\|v_1\|\|^2 - (u_3 \cdot v_2)v_2/\|\|v_2\|\|^2$	15/10/2021	Important	366
MA2001	Dot product	$u \cdot v = uv^T$	15/10/2021		367
MA2001	Find orthogonal vector	Convert into homogenous system with $\sum v \cdot u_i = 0$	15/10/2021	Important	368
MA2001	Length of vector	norm()	16/10/2021	Matlab	376
MA2001	Dot product	dot(u, v)	16/10/2021	Matlab	377
MA2001	Orthonormal of a column space	orth(V)	16/10/2021	Matlab	378
MA2001	Prove subset	$\forall x \in A\ (x \in B) \Rightarrow A \subseteq B$	20/10/2021		399
MA2001	Find general solution of linear system	Set arbitrary parameters λ, μ to variables that only appear once in the REF-ed linear systems	20/10/2021		401
MA2001	Find linear equation	Sub in values into the arbitrary parameters	20/10/2021		402
MA2001	Prove equality of matrices	Separate the matrices into individual elements $a_{i□}$; Use $a_{i1}b_{1□}$ when doing matrix multiplication	20/10/2021		403
MA2001	Prove symmetric	Prove $A^T = A$	20/10/2021		404
MA2001	Prove invertible (Algebra)	Try to express the original statement as a product of the invertible matrix	20/10/2021		405
MA2001	ERO transformation	R is obtained via GJE of A $\Leftrightarrow$ invertible PA = R	21/10/2021		419
MA2001	Relation between nullspace and rowspace	Nullspace of matrix is orthogonal to rowspace	21/10/2021	Important	420
MA2001	Nullspace of transpose	Nullspace of A^TA = nullspace of A	21/10/2021		421
MA2001	Rank of transpose	$\mathrm{rank}(A) = \mathrm{rank}(A^T)$	21/10/2021		422

Course	Thing	Explanation	Date	Important	Index
MA2001	Least squares solution	u is the best approximate solution to Ax = b ⇔ u is a solution to $A^TAx = A^Tb$ ⇔ u is a solution to Ax = p, projection of b onto column space of A ⇔ u is unique or infinite	22/10/2021	Important	425
MA2001	Find projection using least squares solution	Want to find projection of w onto V → Form matrix A using column space of V → Find least squares solution to Ax = w → Find any solutions to $A^TAx = A^Tw$ → Au gives the projection of w onto V	22/10/2021		426
MA2001	Orthogonal matrix	A is orthogonal square matrix ⇔ $A^{-1} = A^T$; ⇔ $AA^T = I$; ⇔ A^T is orthogonal; ⇔ rows of A are an orthonormal basis for $\mathbb{R}^n$ ⇔ columns of A are an orthonormal basis for $\mathbb{R}^n$ ⇔ $\|\|u\|\| = \|\|Au\|\|$ ⇔ $\|\|u - v\|\| = \|\|Au - Av\|\|$ ⇔ Angle between u and v = Angle between Au and Av ⇔ Norm, distance and angles are preserved ⇔ Basis, Orthogonal basis and Orthonormal basis are preserved	22/10/2021	Simportant	427
MA2001	Orthonormal transition matrix	S = $\{u_1, u_2, ..., u_n\}$ and T = $\{v_1, v_2, ..., v_n\}$ are bases for $\mathbb{R}^n$ ⟹ Orthonormal S and Standard T ⟹ P = $(u_1\ u_2 ...\ u_n)$ ⟹ Standard S and Orthonormal T ⟹ P = $(v_1;\ v_2;...v_n)$ ⟹ Orthonormal S and Orthonormal P = $B^{-1}A$	22/10/2021	Important	428
MA2001	Dimension of eigenspace	Dimension of eigenspace ≤ multiplicity (power of eigenvalue in characteristic equation)	29/10/2021		433
MA2001	Theorem 6.2.3 (Diagonalisable)	A has n linearly independent eigenvectors ⇔ $\sum \dim E_i = n$ ⇔ $\dim E_i$ = multiplicity of eigenvalue for every eigenvalue of A	29/10/2021	Important	434
MA2001	Find diagonalisation	n x n matrix → characteristic polynomial → eigenvalues → eigenspaces → bases for eigenspaces	29/10/2021		435
MA2001	Orthogonal diagonalisable	Orthogonal matrix P exists such that P^TAP is diagonal; Symmetric ⇔ orthogonally diagonalisable	29/10/2021	Important	436
MA2001	Find orthogonal diagonalisation	n x n matrix → characteristic polynomial → distinct eigenvalues → eigenspaces → bases for eigenspaces → Gram-Schmidt Process → $(v_1\ v_2\ ...\ v_n)$ is the orthogonal matrix	29/10/2021		437
MA2001	Stochastic matrix	Sum along every column is equal to 1	29/10/2021		438
MA2001	Theorem 5.3.2 (Best approximation)	The projection of u onto W is the best approximation of u in W	29/10/2021	Important	439
MA2001	Definition 5.3.6 (Least squares)	Least squares minimises $\|\|b - Ax\|\|$	29/10/2021		440
MA2001	Theorem 5.3.8 (Least squares solution)	u is a least squares solution of Ax = b ⇔ u is a solution of Ax = p (projection of b on the column space of A) ⇔ u is a solution of $A^TAx = A^Tb$ ⇔ Au = p	29/10/2021	Important	441
MA2001	Theorem 6.1.9 (Triangle eigenvalue)	Eigenvalues are diagonal entries of triangle matrices	31/10/2021		448
MA2001	Theorem 6.3.4 (Symmetric diagonalisable)	Symmetric ⇔ orthogonally diagonalisable	31/10/2021		449
MA2001	Theorem 6.2.7 (Distinct eigenvalues)	Full distinct eigenvalues ⟹ diagonalisable	31/10/2021		450
MA2001	Matrix multiplication	$A(u_1\ u_2\ ...\ u_n) = (Au_1\ Au_2\ ...\ Au_n)$	31/10/2021	Important	451
MA2001	Theorem 5.4.7 (Orthogonal transition matrix)	The transition matrix P from orthonormal S to T is orthogonal and P^T is the transition matrix from T to S $v_1 = \sum(v_1 \cdot u_i)u_i$	31/10/2021		452
MA2001	Theorem 5.2.8.1 (Orthogonal coordinate vector)	$(w)s = (w \cdot u_1/\|\|u_1\|\|^2\ \ w \cdot u_2/\|\|u_2\|\|^2\ \ w \cdot u_3/\|\|u_3\|\|^2\ ...)$	31/10/2021	Important	453
MA2001	Linear Transformation	T is a linear transformation ⇔ T(0) = 0 ⇔ T(u + v) = T(u) + T(v) ⇔ cT(u) = T(cu)	06/11/2021	Important	461
MA2001	Find linear transformation from basis (Stacking)	$A(u_1) = v_1, A(u_2) = v_2, A(u_3) = v_3 \Longrightarrow A = (v_1\ v_2\ v_3)(u_1\ u_2\ u_3)^{-1}$	06/11/2021	Important	462
MA2001	Range of linear transformation	R(T) is the set of all possible images of T	06/11/2021		463
MA2001	Kernel of linear transformation	Ker(T) is the set of all vectors whose images are 0	06/11/2021		464
MA2001	Block matrix multiplication	$A(B_1\ B_2) = (AB_1\ AB_2)$	09/11/2021		465
MA2001	Elementary matrix	$R_3 + 2R_1$ means 3rd row, 1st column is 2; Invert means 3rd row, 1st column is -2;	09/11/2021		466
MA2001	charpoly()	Provides the characteristic polynomial associated with the matrix	12/11/2021		474
MA2001	solve(charpoly(A, x))	Solves the characteristic polynomial associated with the matrix	12/11/2021	Important	475
MA2001	eig()	Finds the eigenvalues	12/11/2021	Important	476
MA2001	null(λ*eye() - A, 'r')	Finds eigenspace associated to the λ	12/11/2021	Important	477