



edc@lboro.ac.uk

U i g M i c r o f a l i c a i

I f a i a d a d i c e f l e a e



wedc@lboro.ac.uk

Backing up

Example: a 3×3 matrix $A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$. Its inverse is $A^{-1} = \frac{1}{\det(A)} \text{adj}(A) = \frac{1}{0} \text{adj}(A)$. Since $\det(A) = 0$, A is not invertible. This means that the system $Ax = b$ does not have a unique solution for every b . In fact, it has either no solution or infinitely many solutions. For example, the system $Ax = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$ has no solution, while the system $Ax = \begin{pmatrix} 1 \\ 2 \\ 0 \end{pmatrix}$ has infinitely many solutions. This is because the rows of A are linearly dependent. In fact, the third row is the sum of the first two rows. This means that the system $Ax = b$ has a solution if and only if $b_3 = b_1 + b_2$. If this condition is satisfied, the system has infinitely many solutions. This is because we can choose the values of two of the variables arbitrarily, and then the third variable is determined by the equation $b_3 = b_1 + b_2$.

Note: a 3×3 matrix $A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$ is not invertible because $\det(A) = 0$. This means that the system $Ax = b$ does not have a unique solution for every b .

.....
.....



the formatting any number of times – until you push the 'Esc' button on your keyboard to stop this feature.

Numbering

Numbering is accessed via the 'Paragraph' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.

Numbering is accessed via the 'Paragraph' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.

Numbering

Numbering is accessed via the 'Paragraph' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.

Numbering is accessed via the 'Paragraph' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.

Numbering is accessed via the 'Paragraph' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.

The 'Table of Contents' and 'Table of Figures' are available from the 'References' tab.

You may need to update such lists, after introducing changes and before you print the final copy of your report by right clicking on your mouse in the list and then choosing the relevant option from the menu that appears.

Search and Replace

Search and Replace is accessed via the 'Editing' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.

Alphabetical

Alphabetical is accessed via the 'Paragraph' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.

Keep Lines Together

Keep Lines Together is accessed via the 'Paragraph' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.

Multiple Pages

Multiple Pages is accessed via the 'Page Layout' menu on the 'Layout' tab or via the menu that appears when you right click on the mouse.

Compare

Compare is accessed via the 'Review' menu on the 'Review' tab or via the menu that appears when you right click on the mouse.

Find and Replace

Find and Replace is accessed via the 'Editing' menu on the 'Home' tab or via the menu that appears when you right click on the mouse.



c a ,ba a .c.) a - ad /
 c a .c .B ca c a a a c
 a a a ad a d
 A c a a a ab a
 d a 'W a ?' a .T a
 a a ,c c a
 c a a a d a ab ,c a a c a
 a ,a a c a a d ,c Exc a
 c d a a a a a a a a
 a a

S d a d WEDC a d
 a ad a c a Exc l a
 c d a d a a
 a b a c Exc b ca b
 a d a a .W d WEDC
 a d Exc c c c a
 d ca a c

T a d a MSc c ,d *Research*
Dissertation d , a ad a b a
 a a da a c c d E d
 c a a a
 a a a a a a a a d
 b Exc

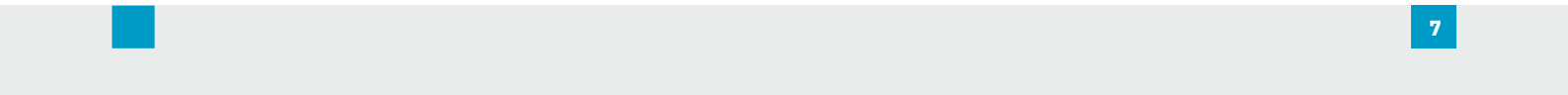
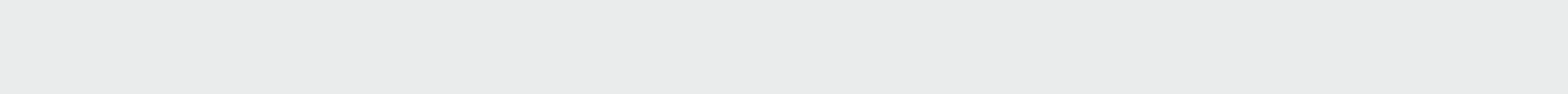
T c a d M c Exc 2010.
 l a d c c c Exc 2010 ad *using*
text in italics.

Some of the features of Excel

Ca c a

Y ca d a a ca c a Exc .H
 d b ca ab d c a
 a a ca a Exc d ab
 Y d b ac a
 a c a ca b
 a c! (. . (2+4)*3 = 18 a 2+4*3 = 14).
 A a d a a a c c a a a d b







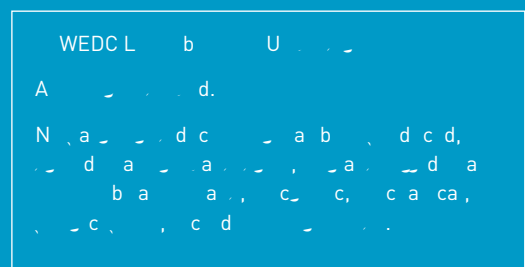
Water, Engineering and Development Centre
 Loughborough Water Engineering Group
 School of Architecture, Building and Civil Engineering
 Loughborough University
 Leicestershire LE11 3TU UK
 T: +44 (0) 1509 222885
 E: wedc@lboro.ac.uk / wedc.distl@lboro.ac.uk
 W: www.lboro.ac.uk/research/wedc
 Skype: [wedcadmissions](https://www.skype.com/en/contacts/individual/wedcadmissions)

Water, Engineering and Development Centre
 Loughborough Water Engineering Group
 School of Architecture, Building and Civil Engineering
 Loughborough University
 Leicestershire LE11 3TU UK
 T: +44 (0) 1509 222885
 E: wedc@lboro.ac.uk / wedc.distl@lboro.ac.uk
 W: www.lboro.ac.uk/research/wedc
 Skype: [wedcadmissions](https://www.skype.com/en/contacts/individual/wedcadmissions)

Water, Engineering and Development Centre
 Loughborough Water Engineering Group
 School of Architecture, Building and Civil Engineering
 Loughborough University
 Leicestershire LE11 3TU UK
 T: +44 (0) 1509 222885
 E: wedc@lboro.ac.uk / wedc.distl@lboro.ac.uk
 W: www.lboro.ac.uk/research/wedc
 Skype: [wedcadmissions](https://www.skype.com/en/contacts/individual/wedcadmissions)

February 2019

Water, Engineering and Development Centre
 Loughborough Water Engineering Group
 School of Architecture, Building and Civil Engineering
 Loughborough University
 Leicestershire LE11 3TU UK
 T: +44 (0) 1509 222885
 E: wedc@lboro.ac.uk / wedc.distl@lboro.ac.uk
 W: www.lboro.ac.uk/research/wedc
 Skype: [wedcadmissions](https://www.skype.com/en/contacts/individual/wedcadmissions)



www.lboro.ac.uk/research/wedc