

Week 9 Linear Algebra worksheet  
MATH1014

Consider the following  $3 \times 3$  matrices:

- (a)  $A$  has two distinct eigenvalues and is diagonalisable.
- (b)  $B$  has two distinct eigenvalues and is not diagonalisable.
- (c)  $C$  has three distinct eigenvalues and is not diagonalisable.

One of the descriptions above is impossible. Why? For each of the two descriptions which are possible, give an example of such a matrix.