C) In Gaussian elimination with partial pivoting, row operations are performed to eliminate the entries in a matrix below the diagonal. At each stage, there is a choice of the rows that have a non-zero entry in the column in which we are doing elimination. Partial pivoting means that we swap the rows with the largest absolute value in the that column to the top of the rows that are not yet done so that the number on the diagonal is as large as possible. The advantage of this is that computer arithmetic loses precision when dividing by a small number so we select the largest number to divide by.

B10. The differential equation is non-linear if $f(t, y)$ is not linear in $y$, i.e. not of the form $f(t, y) = a(t) y + b(t)$ for functions $a$ and $b$. It is first order as only one derivative appears.

As an example, \[
\frac{dy}{dt} = y + 1 \] is linear.