Bài 11:

a/ $\begin{pmatrix} 1 & -1 & 0 \\ 2 & 3 & 5 \\ 1 & 2 & m \end{pmatrix} \longrightarrow \begin{pmatrix} 1 & -1 & 0 \\ 0 & 5 & 5 \\ 0 & 0 & m-3 \end{pmatrix}$

* $m - 3 \neq 0$

$\rightarrow r(A) = 3$.

* $m - 3 = 0$

$\rightarrow r(A) = 2 \rightarrow m = 3$

$r(A) = 2 \Leftrightarrow m = 3$.

b/ $\begin{pmatrix} 1 & 2 & 4 \\ 2 & 1 & 5 \\ -3 & 6 & m \end{pmatrix} \longrightarrow \begin{pmatrix} 1 & 2 & 4 \\ 0 & -3 & -3 \\ 0 & 12 & 12+m \end{pmatrix}$

$\downarrow$

$\begin{pmatrix} 1 & 2 & 4 \\ 0 & 1 & 1 \\ 0 & 0 & m \end{pmatrix}$

Nếu $m \neq 0 \rightarrow r(A) = 3$

Nếu $m = 0 \rightarrow r(A) = 2$

Vậy $r(A) = 0 \Leftrightarrow m = 0$

c/ $\begin{pmatrix} 1 & 2 & 3 \\ 2 & -1 & -1 \\ 3 & 1 & 2 \\ m & 3 & 5 \end{pmatrix} \longrightarrow \begin{pmatrix} 1 & 2 & 3 \\ 0 & -5 & -7 \\ 0 & 0 & 0 \\ 0 & 0 & \frac{4-m}{5} \end{pmatrix}$

Nếu $\frac{4-m}{5} \neq 0$ thì $r(A) = 3$.

Nếu $\frac{4-m}{5} = 0$ thì $r(A) = 2$

Vậy $r(A) = 0 \Leftrightarrow m = 4$.