

5) If it is given that  $\det \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & j \end{bmatrix} = 5$ ,

determine  $\det \begin{bmatrix} 2a & 2b & 2c \\ d & e & f \\ g-4d & h-4e & j-4f \end{bmatrix} \quad \begin{matrix} \text{---} \\ \text{---} \end{matrix} \begin{matrix} = A \\ = B \end{matrix}$

The matrix  $B$  is obtained by (1) multiplying the first row of  $A$  by 2 and (2) subtracting a multiple of one row from another.

The first step doubles the determinant and the second doesn't change the value. Thus the determinant is  $2 \cdot 5 = \boxed{10}$