

$$\det \left(\begin{array}{c|c|c} \text{column 1} & \mathbf{a} & \text{column 3} \end{array} \right) = \mathbf{a} \cdot \det \left(\begin{array}{c|c|c} \text{column 1} & \text{column 2} & \text{column 3} \end{array} \right)$$

$$\det \left(\begin{array}{c|c|c|c} \text{column 1} & \text{column 2} & \text{column 3} & \text{column 4} \end{array} \right) = \det \left(\begin{array}{c|c|c} \text{column 1} & \text{column 2} & \text{column 3} \end{array} \right) + \det \left(\begin{array}{c|c|c} \text{column 1} & \text{column 3} & \text{column 2} \end{array} \right)$$