

计算下列行列式

$$\begin{vmatrix} 1 & 2 & 3 & 4 \\ 2 & 3 & 4 & 1 \\ 3 & 4 & 1 & 2 \\ 4 & 1 & 2 & 3 \end{vmatrix}$$

$$\begin{vmatrix} \frac{1}{3} & -\frac{5}{2} & \frac{2}{5} & \frac{3}{2} \\ 3 & -\frac{1}{2} & \frac{21}{5} & 15 \\ \frac{2}{3} & -\frac{9}{2} & \frac{4}{5} & \frac{5}{2} \\ -\frac{1}{7} & -\frac{2}{7} & -\frac{1}{7} & \frac{3}{7} \end{vmatrix}$$

$$\begin{vmatrix} a_1 & -1 & 0 & 0 \\ a_2 & x & -1 & 0 \\ a_3 & 0 & x & -1 \\ a_4 & 0 & 0 & x \end{vmatrix}$$

$$\begin{vmatrix} 1 & 2 & 3 & 4 \\ 1 & 2^2 & 3^2 & 4^2 \\ 1 & 2^3 & 3^3 & 4^3 \\ 9 & 8 & 7 & 6 \end{vmatrix}$$

$$\begin{vmatrix} k & 0 & -1 & 1 \\ 0 & k & 1 & -1 \\ -1 & 1 & k & 0 \\ 1 & -1 & 0 & k \end{vmatrix}$$