

1 次の行列式を計算せよ. (各1点)

$$(1) \begin{vmatrix} 7 & -3 \\ 5 & 11 \end{vmatrix} = 7 \times 11 - (-3) \times 5 = 77 + 15 = 92$$

(2)

$$\begin{aligned} \begin{vmatrix} 2 & 1 & 4 \\ -3 & 5 & 1 \\ 0 & -6 & 2 \end{vmatrix} &= 2 \times 5 \times 2 + (-3) \times (-6) \times 4 - (-1) \times (-3) \times 2 - 2 \times 1 \times (-6) \\ &= 20 + 72 + 6 + 12 \\ &= 110 \end{aligned}$$

$$(3) \begin{vmatrix} 1 & 3 & -4 \\ 3 & 11 & -4 \\ -2 & 1 & 9 \end{vmatrix} \xrightarrow[\text{③}+2\times\text{①}]{\text{②}-3\times\text{①}} \begin{vmatrix} 1 & 3 & -4 \\ 0 & 2 & 8 \\ 0 & 7 & 1 \end{vmatrix} = \begin{vmatrix} 2 & 8 \\ 7 & 1 \end{vmatrix} = 2 \times 1 - 7 \times 8 = -54$$

$$(4) \begin{vmatrix} -2 & 1 & 0 & 0 \\ 1 & -2 & 1 & 0 \\ 0 & 1 & -2 & 1 \\ 0 & 0 & 1 & -2 \end{vmatrix} \xrightarrow{\text{①}+2\times\text{②}} \begin{vmatrix} 0 & -3 & 2 & 0 \\ 1 & -2 & 1 & 0 \\ 0 & 1 & -2 & 1 \\ 0 & 0 & 1 & -2 \end{vmatrix} \xrightarrow{\text{①で展開}} - \begin{vmatrix} -3 & 2 & 0 \\ 1 & -2 & 1 \\ 0 & 1 & -2 \end{vmatrix}$$

$$\xrightarrow{\text{①}+3\times\text{②}} - \begin{vmatrix} 0 & -4 & 3 \\ 1 & -2 & 1 \\ 0 & 1 & -2 \end{vmatrix} \xrightarrow{\text{①で展開}} - \begin{vmatrix} -4 & 3 \\ 1 & -2 \end{vmatrix} = 8 - 3 = 5$$