



(a)

$$A = \begin{matrix} & \begin{matrix} \text{Red} & \text{Orange} & \text{Green} & \text{Blue} & \text{Dark Blue} & \text{Pink} \end{matrix} \\ \begin{matrix} \text{Red} \\ \text{Orange} \\ \text{Green} \\ \text{Blue} \\ \text{Dark Blue} \\ \text{Pink} \end{matrix} & \begin{pmatrix} 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 3 & 4 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 1 & 4 & 1 & 2 & 1 & 0 \end{pmatrix} \end{matrix}$$

(b)

$$\mathbf{k}^{\text{out}} = \begin{matrix} \begin{matrix} \text{Red} \\ \text{Orange} \\ \text{Green} \\ \text{Blue} \\ \text{Dark Blue} \\ \text{Pink} \end{matrix} & \begin{pmatrix} 1 \\ 8 \\ 1 \\ 2 \\ 1 \\ 9 \end{pmatrix} \end{matrix}$$

(c)

$$\mathbf{k}^{\text{in}} = \begin{matrix} \begin{matrix} \text{Red} \\ \text{Orange} \\ \text{Green} \\ \text{Blue} \\ \text{Dark Blue} \\ \text{Pink} \end{matrix} & \begin{pmatrix} 1 \\ 6 \\ 3 \\ 6 \\ 6 \\ 0 \end{pmatrix} \end{matrix}$$

(d)