

$$\begin{pmatrix}
\omega_n^0 & \omega_n^0 & \omega_n^0 & \omega_n^0 & \omega_n^0 & \dots & \omega_n^0 \\
\omega_n^0 & \omega_n^1 & \omega_n^2 & \omega_n^3 & \omega_n^4 & & \omega_n^{n-1} \\
\omega_n^0 & \omega_n^2 & \omega_n^4 & \omega_n^6 & \omega_n^8 & & \omega_n^{2(n-1)} \\
\omega_n^0 & \omega_n^3 & \omega_n^6 & \omega_n^9 & \omega_n^{12} & & \omega_n^{3(n-1)} \\
\vdots & & & & & & \\
\omega_n^0 & \omega_n^{n-1} & \omega_n^{2(n-1)} & \omega_n^{3(n-1)} & & &
\end{pmatrix}$$

$$\begin{pmatrix}
\omega_n^0 & \omega_n^0 & \omega_n^0 & \omega_n^0 & \omega_n^0 & \dots & \omega_n^0 \\
\omega_n^0 & \omega_n^1 & \omega_n^2 & \omega_n^3 & \omega_n^4 & & \omega_n^{n-1} \\
\omega_n^0 & \omega_n^2 & \omega_n^4 & \omega_n^6 & \omega_n^8 & & \omega_n^{2(n-1)} \\
\omega_n^0 & \omega_n^3 & \omega_n^6 & \omega_n^9 & \omega_n^{12} & & \omega_n^{3(n-1)} \\
\vdots & & & & & & \\
\omega_n^0 & \omega_n^{n-1} & \omega_n^{2(n-1)} & \omega_n^{3(n-1)} & & &
\end{pmatrix}$$

$$\begin{pmatrix}
\omega_n^0 & \omega_n^0 & \omega_n^0 & \omega_n^0 & \omega_n^0 & \dots & \omega_n^0 \\
\omega_n^0 & \omega_n^1 & \omega_n^2 & \omega_n^3 & \omega_n^4 & & \omega_n^{n-1} \\
\omega_n^0 & \omega_n^2 & \omega_n^4 & \omega_n^6 & \omega_n^8 & & \omega_n^{2(n-1)} \\
\omega_n^0 & \omega_n^3 & \omega_n^6 & \omega_n^9 & \omega_n^{12} & & \omega_n^{3(n-1)} \\
\vdots & & & & & & \\
\omega_n^0 & \omega_n^{n-1} & \omega_n^{2(n-1)} & \omega_n^{3(n-1)} & & &
\end{pmatrix}$$