$$\begin{bmatrix}
-\frac{-s+1}{s-1} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & s^k & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\frac{s^k}{s-1} - \frac{1}{s-1} & ks^{(k-1)} & s^k & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 1 & -k & -(-1)^k + 1 & \frac{(-1)^k}{2} - 1/2 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & (-1)^k & \frac{-(-1)^k}{2} + 1/2 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & ks & \frac{ks^2(k-1)}{2} & \frac{ks^3(k-2)(k-1)}{6} & \frac{ks^4(k-3)(k-2)(k-1)}{24} \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & ks & \frac{ks^2(k-1)}{2} & \frac{s^3(k-2)(k-1)}{6} \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & ks & \frac{ks^2(k-1)}{2} \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & ks \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1
\end{bmatrix}$$

$$A^{10} = \begin{bmatrix} 1.0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 9765625.0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 2441406.0 & 19531250.0 & 9765625.0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1.0 & -10.0 & 0.e-125 & 0.e-125 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1.0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1.0 & 0.e-125 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1.0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1.0 & 50.0 & 1125.0 & 15000.0 & 131250.0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1.0 & 50.0 & 1125.0 & 15000.0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1.0 & 50.0 & 1125.0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1.0 & 50.0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1.0 \end{bmatrix}$$