

$$\mathbf{K} = \mathbf{X}[1, 5, 2, 4] \mathbf{X}[5, 3, 6, 2] \mathbf{X}[3, 1, 4, 6]$$

$$\mathbf{X}[1, 5, 2, 4] \mathbf{X}[3, 1, 4, 6] \mathbf{X}[5, 3, 6, 2]$$

$$\mathbf{t1} = \mathbf{K} /. \mathbf{X}[i_, j_, k_, l_] \Rightarrow \mathbf{A} \mathbf{P}[j, k] \mathbf{P}[i, l] + \mathbf{A}^{-1} \mathbf{P}[i, j] \mathbf{P}[k, l]$$

$$\left( \mathbf{A} \mathbf{P}[1, 4] \mathbf{P}[3, 6] + \frac{\mathbf{P}[3, 1] \mathbf{P}[4, 6]}{\mathbf{A}} \right) \left( \frac{\mathbf{P}[1, 5] \mathbf{P}[2, 4]}{\mathbf{A}} + \mathbf{A} \mathbf{P}[1, 4] \mathbf{P}[5, 2] \right) \left( \mathbf{A} \mathbf{P}[3, 6] \mathbf{P}[5, 2] + \frac{\mathbf{P}[5, 3] \mathbf{P}[6, 2]}{\mathbf{A}} \right)$$

$$\mathbf{t2} = \mathbf{Expand}[\mathbf{t1}]$$

$$\begin{aligned} & \mathbf{A} \mathbf{P}[1, 4] \mathbf{P}[1, 5] \mathbf{P}[2, 4] \mathbf{P}[3, 6]^2 \mathbf{P}[5, 2] + \\ & \frac{1}{\mathbf{A}} \mathbf{P}[1, 5] \mathbf{P}[2, 4] \mathbf{P}[3, 1] \mathbf{P}[3, 6] \mathbf{P}[4, 6] \mathbf{P}[5, 2] + \\ & \mathbf{A}^3 \mathbf{P}[1, 4]^2 \mathbf{P}[3, 6]^2 \mathbf{P}[5, 2]^2 + \mathbf{A} \mathbf{P}[1, 4] \mathbf{P}[3, 1] \mathbf{P}[3, 6] \mathbf{P}[4, 6] \mathbf{P}[5, 2]^2 + \\ & \frac{1}{\mathbf{A}} \mathbf{P}[1, 4] \mathbf{P}[1, 5] \mathbf{P}[2, 4] \mathbf{P}[3, 6] \mathbf{P}[5, 3] \mathbf{P}[6, 2] + \frac{1}{\mathbf{A}^3} \\ & \mathbf{P}[1, 5] \mathbf{P}[2, 4] \mathbf{P}[3, 1] \mathbf{P}[4, 6] \mathbf{P}[5, 3] \mathbf{P}[6, 2] + \mathbf{A} \mathbf{P}[1, 4]^2 \mathbf{P}[3, 6] \mathbf{P}[5, 2] \mathbf{P}[5, 3] \mathbf{P}[6, 2] + \\ & \frac{1}{\mathbf{A}} \mathbf{P}[1, 4] \mathbf{P}[3, 1] \mathbf{P}[4, 6] \mathbf{P}[5, 2] \mathbf{P}[5, 3] \mathbf{P}[6, 2] \end{aligned}$$

$$\mathbf{t3} = \mathbf{t2} /. \mathbf{P}[i_, j_] \mathbf{P}[j_, k_] \Rightarrow \mathbf{P}[i, k]$$

$$\frac{\mathbf{P}[1, 4]^2}{\mathbf{A}} + \frac{\mathbf{P}[2, 2] \mathbf{P}[3, 3]}{\mathbf{A}^3} + \frac{\mathbf{P}[3, 6]^2}{\mathbf{A}} + \mathbf{A} \mathbf{P}[1, 4]^2 \mathbf{P}[3, 6]^2 + \frac{\mathbf{P}[5, 2]^2}{\mathbf{A}} + \mathbf{A} \mathbf{P}[1, 4]^2 \mathbf{P}[5, 2]^2 + \mathbf{A} \mathbf{P}[3, 6]^2 \mathbf{P}[5, 2]^2 + \mathbf{A}^3 \mathbf{P}[1, 4]^2 \mathbf{P}[3, 6]^2 \mathbf{P}[5, 2]^2$$

$$\mathbf{t4} = \mathbf{t3} /. \{ \mathbf{P}[i_, i_] \Rightarrow (-\mathbf{A}^2 - \mathbf{A}^{-2}), \mathbf{P}[i_, j_]^2 \Rightarrow (-\mathbf{A}^2 - \mathbf{A}^{-2}) \}$$

$$\frac{3 \left( -\frac{1}{\mathbf{A}^2} - \mathbf{A}^2 \right)}{\mathbf{A}} + \frac{\left( -\frac{1}{\mathbf{A}^2} - \mathbf{A}^2 \right)^2}{\mathbf{A}^3} + 3 \mathbf{A} \left( -\frac{1}{\mathbf{A}^2} - \mathbf{A}^2 \right)^2 + \mathbf{A}^3 \left( -\frac{1}{\mathbf{A}^2} - \mathbf{A}^2 \right)^3$$

$$\mathbf{t5} = \mathbf{Expand}[\mathbf{t4}]$$

$$\frac{1}{\mathbf{A}^7} + \frac{1}{\mathbf{A}^3} + \mathbf{A} - \mathbf{A}^9$$

```
Pk := {Cos[2 π  $\frac{k}{12}$ ], Sin[2 π  $\frac{k}{12}$ ]};  
Graphics[{  
  Line[{P1, P9}], Line[{P2, P11}], Line[{P12, P4}]  
}]
```

